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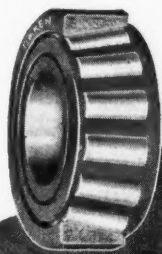
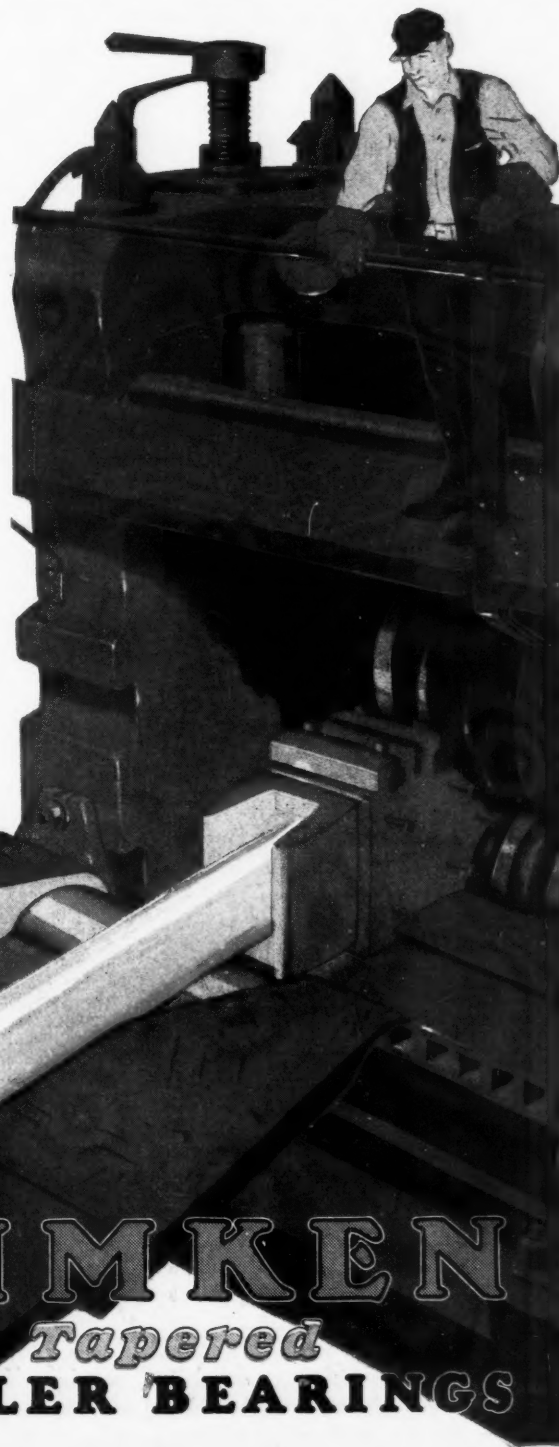
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AUTOMOTIVE INDUSTRIES

VOLUME 58

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NUMBER 9



Can the Dealers Sell 8,000,000 Cars in 1928?

Job they face is a big one and whether it can be handled profitably will depend to a large extent on amount and character of cooperation given by factories.

By John C. Gourlie

DESPITE much greater interest on the part of factory executives in the dealer's problem, and better and more extensive merchandising aids on used cars as well as new, the winter of 1927-1928 was marked by a wave of criticism of factory policies which probably reached a higher peak than in any previous period of the industry's history.

Doubtless the unusually poor state of the automobile market during the early winter was partly responsible, and a better feeling is observable as buying revives. But even dealers who are delivering a large number of cars are protesting that it is harder than ever for them to make money, and they tend to look askance upon the tremendous drives that many factories are launching for a record volume of business in 1928.

Not as Happy as He Looks

The dealers in general probably do not realize that the manufacturer has some rather acute problems of his own, which is to be expected in view of the fact that executives in their contacts with dealers sometimes feel it necessary to assume a mien of supreme confidence. Although this posture may be justified as a factor in maintaining organization morale, it certainly leads to misunderstandings. But while factory problems are deserving of serious consideration, it may be well to look at the situation for a moment in the light of what the dealer is facing. The whole matter can be

summed up in a single question, which is as follows: Can the dealers profitably merchandise 8,000,000 cars in 1928?

There is need for putting the question in such a form. The dealer this year must sell at least as many used cars as new, and probably more. So based on a domestic market for new cars which is optimistically estimated at between 3,500,000 and 4,000,000 units, the total sales by dealers, if present programs are successfully carried out, will not be far from 8,000,000.

Assuming an average price for all the cars to be sold of only \$300, the total sum involved reaches the stupendous figure of \$2,400,000,000. This is indeed quite a selling job. The individual dealer, of course, will not consider his own business in terms of the national market, but the factories might well do so.

The dealer, perhaps, is being asked to sell more cars than his territory can absorb on a price basis that will mean a profit. Profits were not made any easier to obtain when the winter price cuts were announced, because, for one thing, this meant the necessity for further deflation of used car values and trading allowances. It meant, furthermore, fewer dollars gross margin per unit sold.

While new car prices are going down, and used car values somewhat reluctantly tending to follow in the same direction, the dealer is facing a competitive situation of growing intensity. Not only within his own

trade is the scramble for business at the peak, but he is forced as never before to contend against high pressure selling campaigns for such items as radio, oil burners and electric refrigeration—all directed against that small part of the household dollar that does not go for food, rent and clothing.

These considerations are not new, but they are more urgent than they used to be. Automobile dealers at one period were probably the best favored by circumstances of all retailers and perhaps they still are; but it would be blind optimism to say that their position has been growing easier. The accompanying table shows approximately the trend in recent years with regard to average new car sales per dealer. Although for merchants selling lines other than Ford products, the tendency has been toward higher average sales, the actual gain in recent years has been inconsiderable, especially in view of the factors that make for smaller profits.

With prices lower and used cars harder to handle without incurring losses, a small gain in number of cars sold does not help very much. In the last two or three years, to be sure, there has been a gain in the average price of cars sold; but this is in consequence of the smaller sales of Fords and does not mean anything to a particular dealer in a line the price of which has been steadily going downward.

On the other hand, the automobile dealer has certain inherent advantages over many other retailers which the course of events may have lessened but have not obliterated. He has no chain store competition on new car sales, and he is merchandising a product with a distinctly personal appeal. The selling of shirts and shoes and sealing wax largely is on a price basis, pure and simple, but in automobiles variations in style and mechanical construction have a real appeal to buyers. Thus advertising is able to stress significant points of difference and is of immense advantage to the retailer in so far as it does this.

The automobile dealer, if he has a good selling organization and sound business principles, can sell cars on a basis other than price. But he has let a price war into his establishment through the back door—through the subtly undermining influence of the used car.

Holds Manufacturer Responsible

The dealer sometimes says the manufacturer is responsible for the used car price war because the manufacturer turns out and expects to sell more cars than can be merchandised profitably. But probably a large number of dealers think of the situation in terms of discounts and want them lengthened. The crude forcing tactics of many factories in former periods are no longer in evidence and the less observant type of dealer is likely not to see that over-stimulation of the market may be still the principal cause of difficulties encountered by good merchants. Yet the plea for longer discounts is an indirect criticism of the manufacturer.

Another source of complaint concerns the number of dealers and their proximity to each other. It is true that there has been over a period of years a considerable gain in the number of dealers. The total rose from

about 36,000 in 1922 to a peak of slightly over 49,000 in 1926. There the number has stood since, however, and additions are apparently no longer being made to any great extent. In some lines the additions to the dealer organization have been higher than the average, but these are the lines that have made the greatest sales gains, and probably sales could not have been increased to a comparable degree without larger dealer organizations.

Futhermore, additions to dealer personnel have been made to a considerable extent in the territories where representation once was very limited. The big rural

and small town market has been cultivated by the successful factories and those desiring to expand distribution are following the same course. As already noted, any increases in representation have not caused a smaller average of sales per dealer.

The dealers, however, are on firmer ground when they protest that they are placed in competition with newly appointed dealers without the capital or ability to build real sales and service organization, yet who, because of low overhead ex-

penses, are able for a while to dispose of cars by hiking used car allowances. Obviously that is unfair to the dealer who is doing a sound business and no factory executive would defend the practice.

On the whole, however, there seems no reason to doubt that if factory production were scaled down and pressure to take cars relaxed for the benefit of the dealer, any reasonably good dealer would be better off and complaints would cease. But manufacturers must be weary of the reiteration of this much too simple solution of a complex problem. The trouble is not that relaxation of pressure would not better conditions, but that no particular factory is in position to make such a move, or at any rate to a significant degree.

The manufacturer, indeed, is involved in a competitive struggle on a different plane but not less intense than that which the dealer faces. Competition, new and old, has brought car prices down to a level where profits per unit are a thin edge dependent for existence on the continuation of very heavy volume production. The manufacturer may perhaps be criticised for placing himself in such a situation, but such a charge against the automobile industry is an indictment of all American industries today. Profitless prosperity is not a peculiarity of automobile manufacturing.

Faced by the necessity for maintaining volume, the manufacturer naturally looks to the dealer organization for support, and this is where all the trouble begins. If 8,000,000 automobiles cannot be profitably merchandised this year—and there seems some justification for believing in the truth of the statement—obviously a situation calling for correction is presented, for the manufacturer cannot ignore the necessity for adequate dealer profits.

Notwithstanding all harsh words to the contrary, the majority of manufacturers are taking an active interest in dealer profits. A manufacturer might say with some show of reason that used cars are entirely a dealer problem and that if the dealer cannot sell cars without

Average New Car Sales Per Dealer

Year	All Dealers	Ford Dealers	All Others
1927.....	55	35	60
1926.....	70	127	59
1925.....	71	160	55
1924.....	65	137	43
1923.....	84	165	59
1922.....	60	121	42
1921.....	39	98	22

participating in a price war it is no concern of the factory. But the overwhelming majority of factory executives do not take any such attitude.

With an even greater show of reason, some manufacturers might say that their older dealers, who made a great deal of money when conditions were easy, are laying down on the job now that business is harder to get at a profit. They do not say anything of the sort but they inevitably expect that their dealer organizations will get their share of the available business. Failure to keep in step with changing conditions, irrespective of immediate effects, will soon spell disaster to the factory as well as the dealer organization. Consequently any drastic moves, such as a real slackening of sales pressure, must be made, if at all, very gradually while compensating measures are being taken along other lines.

A Policy That Brings Success

Some of these measures are, in fact, already being introduced. The most successful manufacturing companies are those which are doing the most for their dealers and a wider appreciation of this important consideration is observable today.

New dealer contracts can be placed more intelligently. The best factory practice in this respect is all against indiscriminate appointments. Even the largest dealer organizations probably can be expanded when the right dealers are found in the right places. If new dealers are appointed in a territory competitive with an established dealer on the theory that thereby more effective and intensive coverage can be obtained, care must be taken that the new dealer gives promise of being a good merchant, whose competitive methods will not jeopardize the established merchant and undermine factory prestige.

The tendency to concentrate on big city coverage, as already noted, is on the wane, yet a great deal remains to be done along these lines. It will probably be agreed that the territories with the largest registrations ought to have the largest number of dealers. Such coverage becomes more and more desirable as replacement sales tend to approach the total of sales each year. Yet in territorial divisions under 2500 population, which have 53.8 per cent of registration, the proportion of dealers is only 46.1 per cent.

With this in view, it is not surprising that Pennsylvania, for instance, has the greatest number of dealers but ranks fourth in motor vehicle registrations. On the other hand, California, primarily an agricultural state, stands second in registrations but fifth in the number of dealers.

Factory chief executives, it seems apparent, are not always critical of new dealer appointments. Too much is probably left to the discretion of field representatives who do not measure up to the ability that their positions demand. Better selection and training of factory travelers ought to do a lot toward bettering dealer conditions. But the traveler too often, and the zone manager in particular, has felt that his main task was to get dealers to take more cars and to appoint dealers who will sell a few cars temporarily at least, rather than having the primary function of helping dealers to merchandise cars profitably and to appoint new dealers on sound principles. It is certainly better to replace an inefficient dealer with a good one rather than to add another poor merchant for the sake of mere numbers in territory coverage.

There does seem to be a better appreciation of the fact that a factory has to build better merchants in

order to sell more cars, rather than to build more cars and hope that the dealers will sell them. Witness, for instance, the growing number of sound sales helps and merchandising plans, the movement for better accounting methods, and the greater attention to the used car end of the dealer's business.

Some of these latest developments are proof, if any were needed, of the sincerity of the manufacturer's desire to help the dealer. When a factory sets aside part of its advertising appropriation for the promotion of used cars sales and used car good-will, it is spending money on a program of more direct benefit to the dealer than to the manufacturer.

And when a manufacturer spends a good deal of money on introducing sound accounting methods to the dealer organization he gives an even more striking indication of good-will. For when more dealers realize what they are losing on used cars they are not going to be so ready to take a number of cars that they can only dispose of by over-allowance.

Over-production is not nearly so prevalent as it once was and shipments are more generally being based on frequent sales reports from dealers. But much also remains to be done along these lines. Unfortunately there is a wide gap between the manufacturers who are doing most for dealers and those who are doing least.

Withdrawal of excessive sales pressure will help, but in the main improvement in the dealer situation is bound to depend upon constant attention to all the helpful measures that can be taken. Evolution is not as spectacular as revolution, but in that direction lies progress.

Digest of Lighting Laws

A DIGEST of motor vehicle lighting laws and regulations has been compiled by the National Lamp Works of the General Electric Co., similar to one published two years ago. Comparison of the two tabulations provides a picture of legislative tendencies during the period.

Nearly all states require that lamps be lighted from one-half to one hour after sunset, but two years ago only five states require lights at all times when objects were not visible at some definite distance from the vehicle, usually 200 ft. In the interval 12 states have added this requirement to their laws.

White is usually the only light permitted at the front of the vehicle although yellow or amber are sometimes legal. Since 1925 eight states have forbidden the use of red or green front lights and five more have forbidden the use of red.

There is an ever increasing number of states which employ the visibility of an object at a specified distance ahead as the criterion for legal lights. Five states have added this requirement to their statutes since 1925. Five states, also, have added the requirements that high intensity beams must not rise above the ground more than a certain distance at a specified distance ahead.

Laws of 18 states specify that headlighting requirements shall be met by vehicles when loaded as compared with only seven or eight states with this proviso two years ago.

Three states which, two years ago, permitted yellow tail-lights have eliminated this option and have made red the only legal color. Only about six states now permit the use of any color but red for this purpose. The tendency is to require no particular color for stop-lights, five states having repealed legislation specifying colors since 1925.



How Willys-Overland, Inc., Keeps Its Dealers' Books

Introduction of uniform accounting system and instructions in its use have stopped many profit leaks.

By Herbert S. Beebe

Manager Dealer Development Division, Willys-Overland, Inc.

WILLYS-OVERLAND, INC., has provided for its distributors and dealers many sales helps and aids to better merchandising which have assisted them not only to keep abreast of the times in a highly competitive market, but have resulted in increased volume of business and the elimination of many unnecessary losses.

Among other effective merchandising tools, the Willys-Overland Dealers' Uniform Accounting System is deserving of notice because of its accomplishments since its introduction to the company's field organization in February, 1927.

Before the company undertook the preparation of a uniform accounting system it was thought advisable to spend considerable time and money in an effort to determine the needs of its field distributing organization. Merchandising experts accordingly studied the operations of distributors and dealers of all kinds. Their efforts were not confined to one section of the country, but were widespread. These studies not only involved complete analyses of wholesale and retail dealer operations, but included a thorough investigation of the competitive features of automobile merchandising and their effect upon the invested capital of the field distributing organization as a whole.

The conclusions reached from the facts obtained resulted in a determination on the part of the company to make available to its distributors and dealers a modern, double-entry accounting system which would embody the established policies of the company and those principles of sound merchandising which are so essential to the development of a profit-making business.

Experience gathered from analyses of accounting systems actually in use in many dealer establishments, the owners of which had paid relatively large sums to outside accountants for the installation of systems which were inadequate from the standpoint of en-

abling the dealers to ascertain definitely the trend of their merchandising operations, convinced the company that the interests of its distributing organizations could best be subserved by the introduction of an accounting system prepared by its own merchandising experts and accountants—men trained by years of experience in the automobile business.

This decision was supplemented by another of almost equal importance—a decision by the company to engage and train its own installation accountants, thus assuring both the field organization and the company that systems would be correctly installed, that the established policies of the company would be followed, and that the instructions to the personnel of the distributor and dealer establishments would be uniform.

The writing of the system was punctuated with differences of opinion which always have and always will exist among accountants, but the committee never lost sight of the requirements which are so essential to the success of a system intended for national use.

Dangerous Practices Discovered

Studies of the various systems which the company's investigators found in use throughout the United States, has revealed the startling fact that adherence to precedent and so-called "technical procedure" as applied to the subject of accounting in general, had resulted in the use of dangerous accounting practices and the incorporation of abortive conceptions of merchandising into systems to such an extent that the capital structure of many automobile distributing organizations appeared to be menaced from without by a relentless, unseen foe.

So subtle were the veiled attacks of this apparently implacable antagonist that only the most careful analysis—a stripping bare of both accounting

practice and underlying merchandising theory by an unbiased observer—would enable one to detect the causes which were slowly, but surely, impelling unsuspecting merchants toward insolvency.

The revelations, resulting from thorough diagnosis of accounting systems in the class alluded to above, pointed to the fact that the dreaded foe was not "without the gates" but was firmly intrenched within the business organization, and there, daily, throughout the fiscal year, was despoiling the credulous merchant of the profits to which he was justly entitled.

In such business institutions, the discarding of inadequate and obsolete accounting, office and shop equipment and the elimination of hopelessly "twisted" conceptions of merchandising must become an accomplished fact before the personnel is prepared to meet that stimulating opponent known as "competition."

Listing Some Mistakes

Among the dangerous accounting practices mentioned above were such costly things as unnecessary and duplicated entries; improper arrangement of general ledger accounts; inability to compile an operating statement during the progress of a fiscal year because of having no provision for the costing of sales; arbitrary allocation of general and administrative expense into the direct expense of operating departments, which resulted in the loss (through fusion) of both the direct and indirect expense pictures; misleading balance sheets and operating statements, due to improper arrangement; manipulation of entries involving overallowances on used cars, which resulted in the destruction of the true picture of new and used car merchandising—accounting practices which distort the assets, liabilities and profit and loss accounts, in some establishments, to such an extent that impending insolvency is not apparent to the observer.

Combined with questionable accounting practices, inadequate mechanical accounting equipment was found, i. e., inadequate books of original entry and subsidiary forms.

Obviously, the company, in providing a uniform accounting system, found it necessary to prepare the system in such a manner that the defects in mechanical accounting equipment, in accounting practice and in merchandising policy would be corrected. If this could be accomplished, many thousands of dollars would be saved annually to the distributing organization, as a whole and individual distributors and dealers would receive substantial benefits through the preservation and increase of their capital investment. In short, the system would have to eliminate the weakness within the distributing organization, so that it would be prepared to meet competitive aggression from without.

The company fully realized that the correction of inadequate mechanical accounting equipment would be disposed of, automatically, by the installation of the new system, but the elimination of dangerous accounting practices and unwise merchandising policies would become an accomplished fact only through education and persistent effort.

The system was, accordingly, prepared with these objects in view. Besides providing adequate books of entry and miscellaneous forms which are essential in an automobile distributing establishment, the company prepared an accounting manual which gives a complete explanation of each account and each form. Sample entries were then made on the forms, with explanations intended for the use of the bookkeeper,

and the forms were photographed and made a part of the manual.

The system is available to distributors and dealers of the company at a nominal charge for the forms, books and installation. Besides making the complete installation in the distributor and dealer establishments, through its own trained accountants, the company gives each distributor and dealer the benefit of a monthly analysis of operations. This is done without charge and with the definite purpose of accomplishing the objects heretofore stated. Approximately one-third of the installation period is consumed in closing the old set of books and opening the new, and the remainder of the period is used for the training of the bookkeeper and the personnel of the organization.

The system was so prepared that it will expand to conform to the needs of the largest distributor establishment, or will contract to meet the requirements of a small dealer whose operations are large enough to warrant the use of a double-entry accounting system.

The Class "A" system, intended for use in operations involving the actual sale of new cars in excess of 100 annually is a departmentalized system, whereas the Class "B" system, for the use of dealers who sell less than 100 cars a year, is not departmentalized.

Both systems have the same books of original entry, the same forms and the same card accounts, but the expense accounts in the Class "B" (non-departmentalized) system do not carry the departmental letter prefix before the expense account members.

This arrangement of the card of accounts will enable the company to compile, from the financial statements of the distributing organizations, averages of gross profits, expense, and net profit which



Herbert S. Beebe

will be of inestimable value from an operating standpoint. Average ratios of assets to liabilities, of used cars sold to new cars, etc., will also be available. In other words, individual assistance to distributors and dealers will be supplemented by operating "yardsticks" which will perform a real function in the building of sound merchandising institutions.

The policy of merchandising, as elucidated by the company in the system and in written analyses of operations, is based on the making of an adequate or normal gross profit on each class or kind of merchandise or commodity sold, combined with careful control of both departmental (direct) and general and administrative (indirect) expense. This policy is based on the assumption that the public will cheer-

fully pay a reasonable price for good merchandise and good service.

It is axiomatic that merchandise must be sold at an amount of gross profit in excess of the reasonable cost of operating, or a business establishment will eventually be compelled to suspend operations because of loss of invested capital. A sound policy is essential in organizations marketing merchandise or commodities which are priced on a competitive basis. This sound merchandising policy, as herein enunciated, erects protective barriers for wise merchants who grasp the correct principles of merchandising, and does not tolerate the plea of extenuating circumstances from those recalcitrant operators who sacrifice the gross profits on one class of merchandise to promote the sale of another.

Based on Gross Profit

In order that the policy herein outlined might be followed, the company made provision in the operating statement forms for the figuring of percentages of gross profit on each kind of merchandise sold, and for percentages of direct and indirect expense. These percentages are figured to either departmental or total sales volume as the conditions require. Percentage to sales is regarded as the best method of computation because selling prices are more or less stabilized either by written contract or by trade custom. For example, the discount on new automobiles sold by a manufacturer to a distributor is determined by written contract, and is computed from an established market or list price. The percentage of gross profit on new automobiles sold at retail should, therefore, be equivalent to the contract discount. Each class or kind of automotive merchandise has a criterion for judging the normality of gross profit.

Operation of the system in many distributor and dealer establishments has already resulted in the saving of thousands of dollars because of the comprehensive analytical procedure adopted by the company.

Careful observation of operations indicated, shortly after the installation of the first few systems, that one of the greatest sources of loss was a failure to earn normal gross profits on merchandise the list price of which is not fixed by contracts—such merchandise as accessories and gasoline, oil and lubricants.

Accessories, by trade custom, as well as gasoline, oil and greases, had, in many establishments, been inventoried with automobile parts, the list prices of which are fixed by contract. Substantial losses of gasoline and lubricants could therefore be concealed in substantial gross profits on parts.

In some dealer establishments losses in accessories were caused by the selling of accessories at reduced market prices in order to promote new car sales.

The segregation of accessories from parts on the operating statement of the system quickly revealed reduced gross profit percentages, resulting in investigations which corrected these financial leakages.

A similar separation of gas, oil and lubricants, and the checking of the inventory monthly, pointed to heavy gross losses in this class of merchandise. Investigations disclosed that these losses were due to careless handling, unauthorized dispensation without charge, and in some cases, to outright pilferage.

Investigations of reduced gross profit percentages on new cars, sold at retail, revealed book manipulation of overallowances to the public

on used cars purchased by the dealers at prices which they could not hope to realize from sales in the open market.

In short, the money which will be saved to users of the system as a result of segregation of merchandise, frequent inventory verification and the measuring of gross profits, will amount to thousands of dollars annually.

Next in importance to gross profit is expense of operation. Previous studies of accounting systems in use among the company's distributors and dealers, indicated that many organizations were top-heavy from an operating standpoint. In some institutions one or more expense accounts, among a limited number, were used as a "dumping ground" for excessive and unauthorized expense. The inroads into the profits earned from the sale of merchandise, combined with losses in gross profits caused by unwise merchandising, were gnawing at the very vitals of the capital structure of these organizations.

By providing a sufficient number of essential expense accounts in the Uniform Accounting System, by segregating those expenses which are most subject to manipulation and "dumping," and by measuring both direct and indirect expense with the same kind of a yardstick as is used to measure gross profits, thousands of dollars are being saved annually to the distributing organization.

The savings alluded to above apply to the distributing group, as a whole, but these group savings are, obviously, composed of individual cases. Many concrete examples could be cited to confirm the assertion.

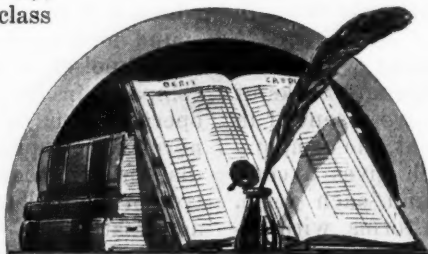
The savings embrace practically every phase of a distributor or dealer operation. The losses corrected by the intelligent use of the system not only affect the merchandising departments, but also extend into the assets of the business.

"Frozen Assets" Exposed

So called "frozen assets," such as uncollectible accounts and notes receivable and excessive inventory of unsalable used cars, are quickly exposed by expert analysts. This results in the establishment of effective collection methods, and guidance of the dealer in the purchase, conditioning and resale of used cars. Inventory losses from automobile parts stock are quickly discovered and corrected by providing inclosed stock rooms, adequate bin equipment, stock record cards and subsidiary forms essential for the recording of movements of stock.

Where high percentages of overhead expense indicate a lack of sales volume, expert sales promoters are delegated to the dealer to assist him in building volume on a sound merchandising basis. In this manner the dealer becomes familiar with the many specialized methods of volume building, such as training and development of salesmen, effective methods of local newspaper and outdoor advertising, analysis of the sales possibilities of his city and community, and many other sales helps which are so essential to the development of a retail automobile business.

Installations of the system have been made in distributor organizations and dealer establishments in many parts of the United States. The large increase in requests for installation is evidence of appreciation of the importance of the recorded results of business transactions for corrective purposes.



Just Among Ourselves

It Sounds Nice in Print, But—

UNDER the heading, "The Motor Moloch," the New York *World* says editorially that, "The motor car today is greedier for victims than the machinery of our mills has ever been, and its curbing will require even greater effort." Like many other metaphors, this one is as inaccurate as it is picturesque. Neither the machinery of our mills nor the motor car in themselves have ever been preying beasts; both have been merely instruments in the hands of human beings, bringing along with untold blessings a meed of evil proportionate to the competence of their operators. It is worth noting, moreover, that the remarkable reduction in industrial accidents, which the *World* admits, came about in large measure through perfection of machines and operating methods and human education and not through "curbing" the machine. The most successful means of preventing accidents in punch and power press work, for example, have been through development of methods which make it unnecessary for the operator to place his hands between the jaws of the press and which increased by many per cent the production output of the machine. The use of the machine was extended rather than curbed.

* * *

Curbing Their Use Isn't the Remedy

THERE is no blinking the appalling total of deaths coming about as a result of motor car operation. It is worth remembering, however, that permanent results in accident prevention will come faster through better means of operating and utilizing the vehicles than through trying to curb

their use. Speeding up traffic in certain instances already has been found to be a greater help to safety promotion than slowing down of traffic. Pedestrian education is of equal importance with driver education—and plenty of both is needed. The practical work already done by the Erskine Bureau for Traffic Research, for instance, while very effective in decreasing accidents has been along the lines of more effective use of the vehicle rather than along the lines of "curbing" its use.

* * *

Germany Wants American Parts

THE growing tendency of European manufacturers to buy American unit parts as standard equipment in their cars we pointed out some months ago. The increase in tariff on parts in Germany, seemingly opposed to that trend, was, of course, directed at those American companies operating assembly plants in Germany. That German makers look with favor on American parts for their own cars is indicated by the following interesting paragraph from a letter written by the export manager of an American company now traveling in Germany: "There is a tendency," he writes, "for German automobile manufacturers to use American parts which are in many respects recognized as superior to the German product. Evidently they are trying to give German cars American features to reduce the competition of the all-American car. The result will no doubt be the manufacture of American parts in Germany, under license arrangements, by new plants, etc., and those factories looking ahead along these lines probably will fare best."

The New School of Biography

BIOGRAPHY has taken a new hold on the reading public in the last few years, due largely to the emergence of a new school of biographers. While the members of this new school differ widely in literary method and quality, they have in common the fact that they approach their subject with the thought of interpreting the man as he was rather than the man as he ought to have been or as the public already liked to believe him to be. Ludwig, Sandburg, Woodward, Hughes and Maurois have brought a new and fuller meaning to the life and works of great figures of the past.

* * *

Material for a Ludwig in Automotive Field

A FEW scattered attempts at biography of this kind have been made in writing about men still alive. But those attempts have been very limited in number and, perhaps, because of difficulties inherent in the problem, equally limited in achievement of their purpose. Few really critical interpretive biographical articles or books, for instance, have ever been attempted concerning the powerful, and in many cases, colorful men who stand and have stood at the head of automotive development. Certainly there is biographical material in this industry worthy of a pen motivated by that nice combination of the sympathetic, the critical and the accurately interpretive which marks, for instance, Ludwig's treatment of Napoleon or Maurois' of Shelley. Few Ludwigs are wielding automotive pens, but one cannot help speculate on the interesting possibilities along this line.—N.G.S.

New G.M.C. Truck Plant Solves of *Diversified* Production

Multiplicity of truck, bus and taxicab models assembled with minimum waste of time and movement due to careful planning of layout preceding construction.

WITH installation of equipment and machinery nearing completion, the new plant of the General Motors Truck Co., at Pontiac, Mich., was put into part-scale operation during January, less than six months after ground was broken for the building of the factory. Constructed at a cost estimated around \$8,000,000, this new plant will shortly house all the assembly operations on the diversified line of commercial vehicles produced by this company, including the G.M.C. trucks, Yellow buses, and Yellow taxicabs.

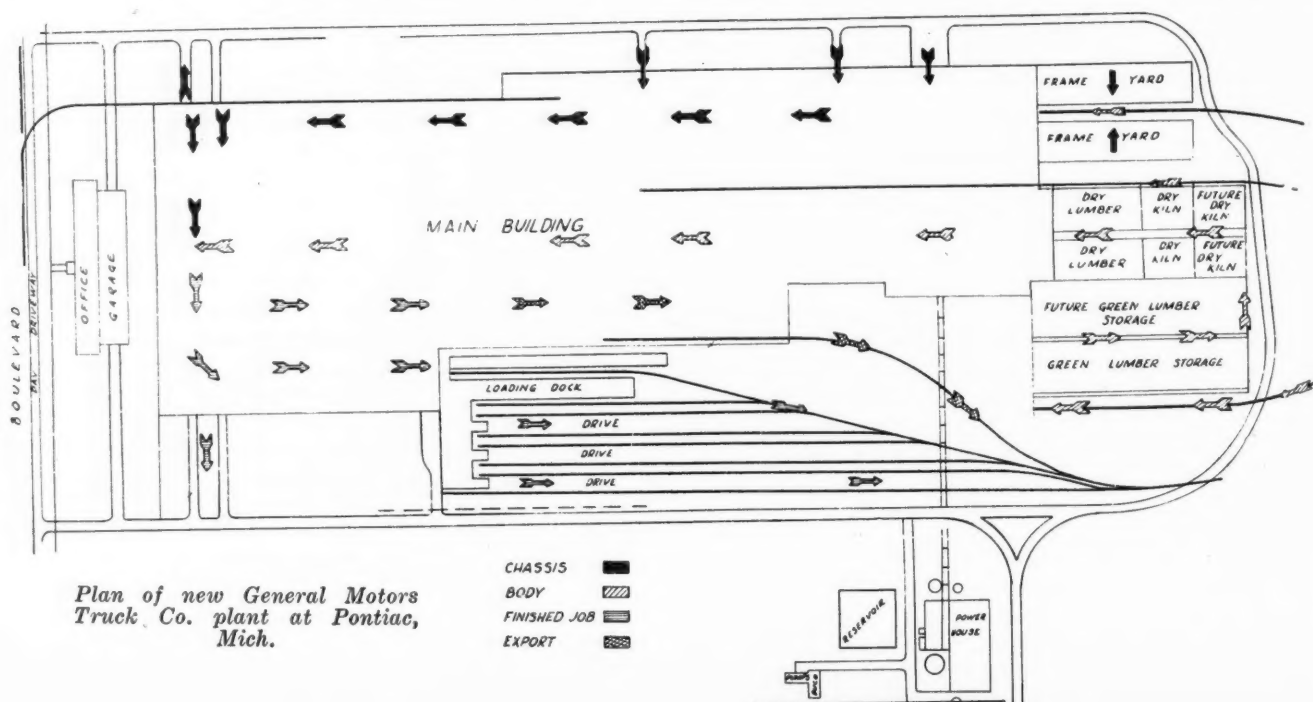
One of the factors making it possible to begin operations in so short a time after breaking ground was the research in layout which preceded the beginning of building operations. A passenger car plant presents problems enough, but when it is considered that truck production has to be spread out over a multiplicity of models, and when to these are added also a large number of bus chassis models, as well as several taxicab sizes, it is easy to see that material handling and routing become of transcendent importance in plant design.

In view of these facts, several different organizations with somewhat conflicting ideas regarding the

proper layout required were put to work on designs. With these completed, comparisons were made, some necessary compromises effected, and the final layout evolved.

Perhaps the most interesting problem which had to be solved was the number of floors to be used. A single floor plant would have been ideal if the material routing problems could be neglected. But with a minimum of four assembly lines determined upon as necessary to carry the G.M.C. line, a single floor layout would have presented the problem of how to get materials to the central assembly lines. This would have had to be done either by overhead conveyors, lifting and dropping the materials; by underground passages, involving lowering and then raising materials, or by humps in the assembly lines providing underpassages. The first two alternatives represented undesirable additional material handling operations; the last could not be used, since it would be quite a task to raise and lower a heavy duty truck over a hump.

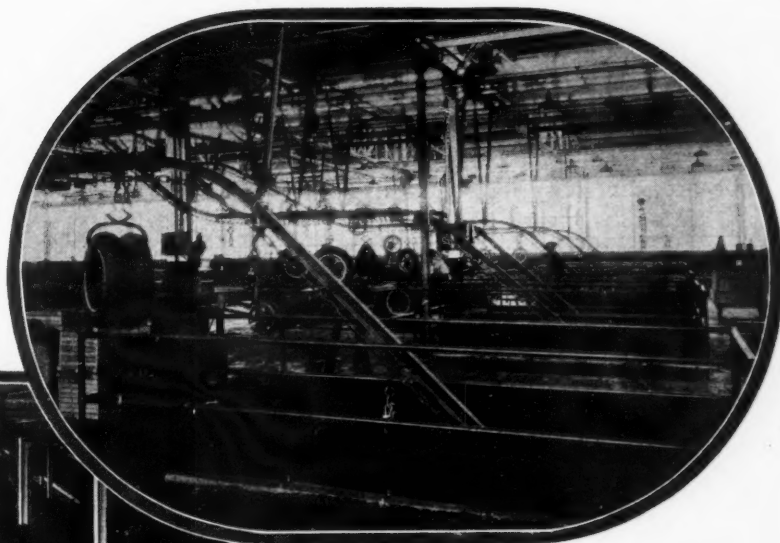
On the other hand a straight two-floor layout would mean that bodies would have to be raised to the second floor for assembly, and finished trucks low-



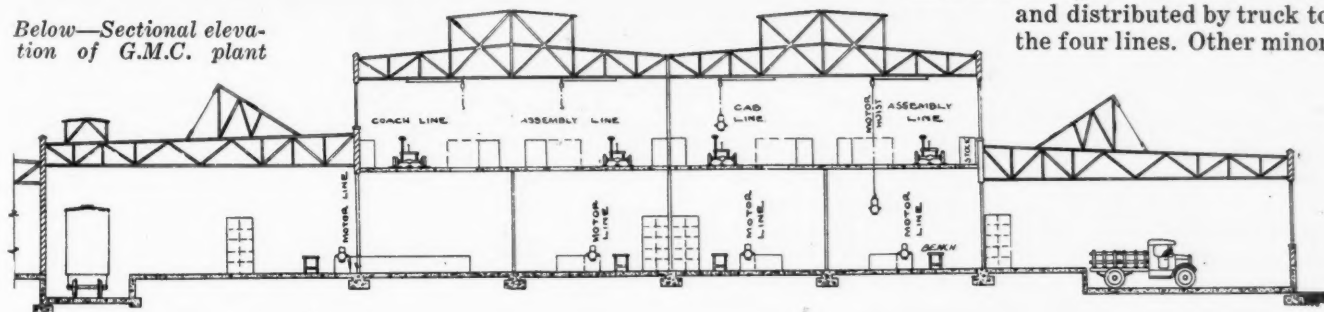
Problem

[By A. F. Denham]

Below—Chassis material receiving platform (truck freight). Right—Wheel conveyors



Below—Sectional elevation of G.M.C. plant



ered for shipment. The final evolution consisted of a combination of the desirable features of each method, with the chassis assembly line on the second, and all other operations on the main floor.

In operation there are two receiving platforms on the main floor, one for rail receipts on one side of the plant and one for trucks and electric car shipments on the opposite side. In between the two tracks material is stored and chassis sub-assembly operations are carried out, these including such items as cowl assemblies, powerplant final assembly, tire and wheel assembly, etc. Above this floor the chassis assembly lines are located, extending to a point about equal to the end of the receiving platform lines. At this point there are four ramps to bring the assembled truck chassis to the main floor.

Body Manufacturing

Body manufacture and assembly is carried out on the main floor, paralleling the chassis lines. The two meet at the end of the plant, where the chassis turn at right angles across the end of the body lines, and receive the bodies, the latter being handled at this point by a 15-ton overhead crane.

Following this operation the trucks make another right angle turn, doubling back on their former direction, and pass on to the domestic shipment platforms

and the export crating department, with its rail shipping line.

Several different methods are employed for delivering the chassis units to the chassis assembly lines above them. There are two escalators, one near the head and one near the end of the four assembly lines. On these stocks of small units are brought to the floor above and distributed by truck to the four lines. Other minor

assemblies, such as tires and wheels, are brought up on continuous chain conveyors. Heavier units, such as axles and powerplants, are raised by electric hoists through hatches located at the proper points in the assembly line.

Driveway to Second Floor

Although this section of the plant is of the two-floor construction, it is also possible to deliver chassis parts directly to the upper floor, since the ground at the rear of the building has been made level with the upper floor. This is made use of to deliver frames directly to the lines. In the case of the smaller standard units, these frames are trucked directly in the assembled condition from the frame yard to the head of the assembly line. In the case of the larger truck (over 2-tons) and bus units, where standardization on frame length is impossible due to the great variety of wheelbases required, the side rails and cross members are delivered unassembled and are riveted together before being placed on the line. Sufficient space has been provided ahead of the beginning of the assembly line to permit of this operation on the same floor.

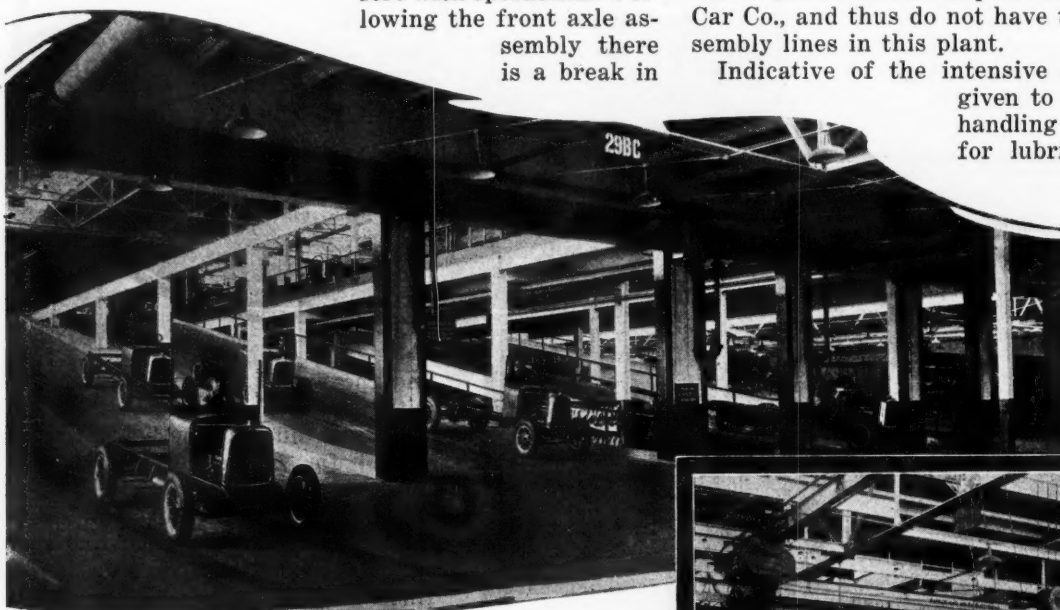
At the head of the lines are found the first group of five hatches to deliver springs and rear axles assemblies to the upper floor. The fifth hatch (four assembly lines) is required for the handling of the

taxicab units which are rubber mounted, thus reducing confusion in stocks on the floor below.

Front axles are next assembled on the units. These are brought to the lines by trucks from the escalator at this end of the plant, the point of assembly being so near the head of the line that trucking in the wide aisles between lines up to this point does not interfere with operations. Following the front axle assembly there is a break in

are cleaned by spraying with gasoline, and are lacquered in spray booths. Here also the enamelware, such as fenders, running boards, hoods, etc., are assembled on the chassis, these parts being stored under the ramps. A fifth assembly line is also being installed on the lower floor at this point to take care of final assembly on the T-11 series trucks, chassis for which are received complete from the Oakland Motor Car Co., and thus do not have to go over the main assembly lines in this plant.

Indicative of the intensive study which has been given to elimination of material handling is the provision made for lubricating and fueling of the units. Crankcase, oil, transmission and rear axle lubricant, and gasoline are all piped to the main assembly lines, and metering devices are used to enable



Above—Ramps leading from initial chassis assembly to final assembly. Right—engine hoists

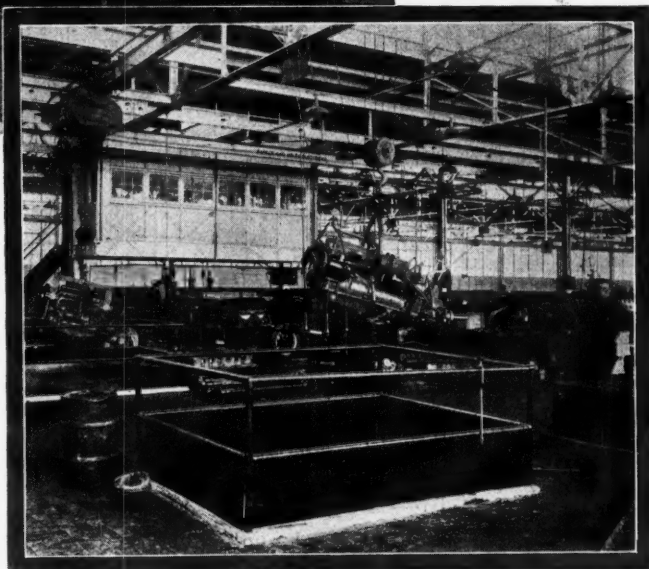
the roller assembly line at the point where chain conveyors bring wheels and tires to the lines. Chassis are then turned over in the conventional manner, and are attached to the chain conveyor extending to the end of the assembly line. Powerplants are also brought up through hatches, by means of electric hoists, and placed directly on the units, banks of stock being carried on the floor below. There is one hatch to every line. Other units such as steering gears, etc., which are assembled near the end of the line, come up on skids on the escalator located at this point, being trucked from there to the various lines. Following the end of the line, there is a truck storage well, sufficiently large to allow flexibility in production both ahead and following this point.

Truck Dynamometers

Next there are a series of truck dynamometers on which the units are given a 90-minute test in all speeds and up to full throttle operation. Torque is absorbed by rollers under the rear wheels to which are attached electric generators mounted under the floor. All dynamometers are fitted with quickly adjustable jacks to provide for variations in wheelbase length. Fuel economy tests are also the part of every dynamometer test, a fuel metering tank being provided for this purpose, as well as a mileage and speed recording speedometer.

Tested trucks then pass down the aforementioned ramps to the floor below. One of the ramps is of double width so that trucks which have been rejected either in final inspection or on road tests can be brought back to the assembly floor without interfering with operations.

At the bottom of the ramps the trucks are again attached to a chain conveyor line. Here the chassis



the use of the correct amount for each unit. Battery charging rooms are also located at the nearest point to that corresponding to the assembly line where batteries are placed in the chassis.

Body building as far as plant layout was concerned was engineered by the Fisher Body Corp. in cooperation with G.M.C. Provision has been made for all operations from green lumber to the finished body. A large green lumber storage yard is provided, where the lumber is stored on rail flat cars. Transfer trucks also running on rails deliver the green lumber to the drying kilns. The latter are located adjacent to the chassis frame yard, and are at about the same level as the upper floor of the assembly building. From the dry kilns, lumber passes into the covered and heated dry lumber storage shed. Here the loads on the flat cars are broken up and delivered from the end of a projecting platform to the stock saws below by means of overhead cranes.

From the stock saws the wood passes through the regulation mill-work operations, body parts being built up in sub-assemblies between the main assembly lines which are of the chain-truck conveyor type. Sheet metal stamping equipment is also being install-

ed with the termini of the stamping operations located near the point of assembly of sheet metal into the bodies. Special provisions for working on bodies from overhead are also being provided for the double-deck buses built by G.M.C.

One interesting feature of the body assembly lines is the provision of high frequency outlets all along the line. These are spaced about 8 ft. apart on both sides of the lines, the fixtures extending down from the ceiling, with two outlets per fixture, thus providing an outlet for about every two feet of the assembly line.

Export Tear-Down Department

Of interest also is the export tear-down department. Since nearly every truck shipped for export has some characteristic difference, the building of crates is practically a custom proposition. On account of this the crates are built up on a line directly adjacent to the truck tear-down line, providing a quick check and eliminating much blue print handling, etc.

A description of the plant layout is not complete without mention of the use to which available space has been put. On the floor below the chassis assembly lines, as has been mentioned, minor chassis assembly operations are carried out. On this floor also are located the enamelware storage, electric supply storage, plant supply storage and maintenance, and salvage parts departments. Back of these the receiving platform begins. Here incoming units are inspected.

Cowls and instrument boards form a separate assembly, carried out on two progressive lines, meeting at the center under the hatches through which they are raised by electric hoists to the assembly lines. Back of these is the motor storage. This is arranged so that the high production units are located nearest the hatches, with the largest units furthest away. Handling of the motors is facilitated on the lower floor by the provision of a network of overhead monorails and chain hoists. Motor and transmission assembly, including electrical units, is performed on roller type conveyors with turntables at the ends of the lines, for transfer of the motors to transverse lines running under the hatches through which they are raised to the floor above. There is one powerplant assembly line for each type of unit.

Since there are always some chassis parts which require machining, such as frame brackets, etc., a space has been given to these operations on the upper floor near the beginning of the chassis assembly lines. Here are located batteries of standard machines to which are delivered by the escalator located at this end of the plant, the small parts requiring machining. One or two minor assemblies are also performed here, including battery cradles and tire carriers; in short, such minor assemblies as require some machining operations.

While stocks of materials naturally vary according to type, the average

bank of all materials covers operations over a 10-day period. Exceptions are of course found in lumber storage, probably tires, wheels and rims, and component frame parts for the larger truck models, for which larger banks are carried.

Present production plans call for the allocation of the various vehicle models as follows: On the first line the Model T-19 one-ton Pontiac engine truck will be produced; the second line will carry the T-20 and T-21 one-ton Buick engine trucks as well as the taxicabs; T-40 and T-50 models of 2 and 2½ tons capacity will be produced on the third line, while on the fourth all larger trucks, tractor trucks, and coaches will be assembled.

As mentioned, there will be a short fifth line for the T-11 truck, using the Pontiac six chassis. Taxicabs are produced on line No. 2 because units are largely identical with the exception of clutch and transmission.

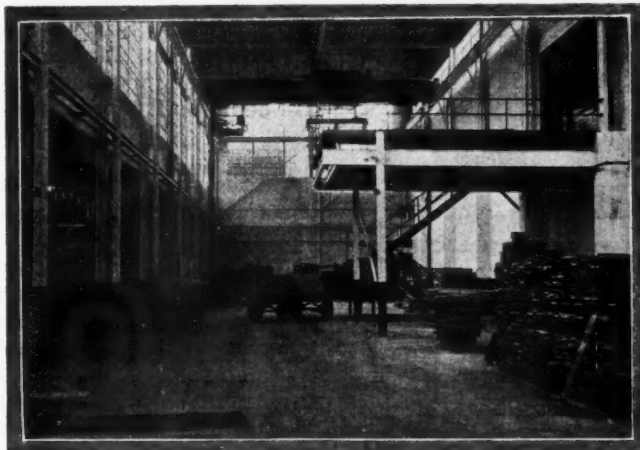
The whole layout of the plant impresses one with the flexibility of operations possible, enabling quick shifts from one line to another in case of increase in demand for a certain model which otherwise could not be handled, and also being admirably laid out to prevent any delays in assembly line construction due to design changes. The latter is considered an especially important feature in view of the generally accepted fact that both bus and truck design are at present in the stage of transition.

Extra Floor at Low Cost

That the two-floor plant layout has been achieved without doubling construction costs is also quite evident. A study of the plant cross-section shows that the addition of an extra floor merely required the raising of the roof monitors by lengthening out some of the columns, insertion of a floor and the provision of two lines of supporting columns for this floor. Another factor which is quite evident from a study of the floor plan layout is that ample provision has been made for plant expansion. This can be achieved either by merely adding another block of assembly line to the upper floor (by raising the monitor over the truck delivery sheds) or by duplicating the plant structure on the same side (for further expansion).

Since working conditions and methods of transportation are also an all-important factor in the construction of a new plant, ample consideration has also been given these conditions, as is amply illustrated by the provisions of a parking lot for employees allowing for the parking of 2500 cars, and the provision of a trolley loop with a covered loading platform near the parking lot, connecting with a spur of the Detroit United trolley lines. These, however, are not shown in the accompanying plan view.

The consolidation of all activities of the General Motors Truck Co. at the Pontiac plant even includes the moving of all offices to this plant. A large administration building has been built for this purpose, in back of which is a garage for the cars of officials, accessible by concrete driveway



Lumber transfer, dry storage to stock saws

loops from South Boulevard, on which the plant fronts.

Connected by an overhead bridge over the railroad yard with the main plant is a large powerhouse which also has been built especially to cover operations in the G.M.C. plant. At the powerplant are located also the water reservoir, coal storage yards and Duco pumps, while provision has been made here also for future powerhouse extension.

One of the boilers located in the powerhouse has been adapted to the burning of either pulverized coal or sawdust. The latter is gathered in the wood-work and body divisions of the plant by an extensive suction system to which is added sawdust derived from a wood-hog which chews up the scrap wood from the mill-work operations. The sawdust is carried to a large hopper adjacent to the powerhouse through chain conveyor equipped metal ducts through the overhead bridge previously mentioned, and is fed by gravity from the hopper to the boiler. At full capacity operation this sawdust supplies from one-quarter to one-third the total fuel needed by the powerhouse.

Graf Constant Compression Engine

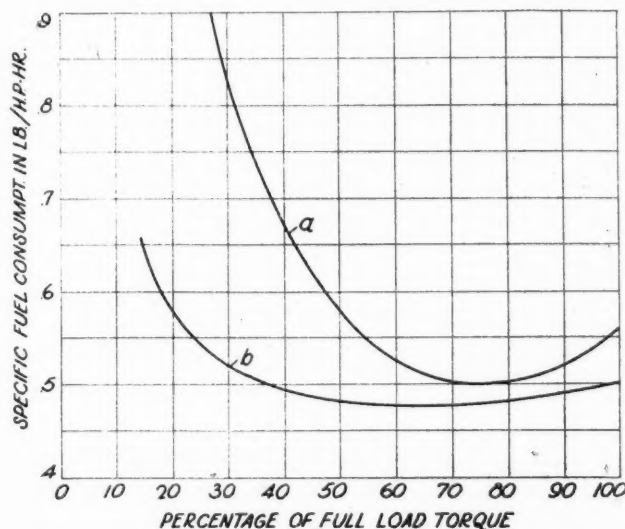
OTTO GRAF of Berlin has developed a new constant compression engine of the type in which two pistons operate in the same cylinder. The pistons connect through short connecting rods to rocking levers at the ends of the cylinders, from which other connecting rods connect to a crankshaft located below the horizontal cylinders. This general construction, of course, is old and was used particularly during the early years of the automobile industry in order to secure balanced operation with a small number of cylinders.

The novel feature of Graf's engine is that the rocking levers at opposite ends of the cylinders are mounted on eccentric bushings and these bushings have levers secured to them which connect through links or connecting rods with two pistons located in a cylinder which communicates with the inlet manifold of the engine.

The vacuum in the manifold is proportional to the amount of charge which enters the engine cylinder per cycle, and the compression pressure in the cylinder varies with the amount of charge entering it. If the throttle is closed and the manifold vacuum increases

in consequence, the pistons in the control cylinder are drawn farther into it, against the tension of retracting springs. This moves the eccentrics in the balance levers into such a position that the two pistons in the engine cylinder come closer together at the end of the compression and exhaust strokes, so that the compression space is reduced, and the endeavor is to keep the compression pressure constant throughout the operating range.

The engine has been built in a two-cylinder type of



Variation of specific fuel consumption with load factor, with constant clearance (a) and constant compression (b) respectively

3.34 in. bore and 3.62 in. stroke for each piston, and we understand that a number of German manufacturers are interested in the new design to the extent of having ordered sample engines.

THE DAIMLER-BENZ WORKS in Germany at present are producing about 1500 cars per month, including 600 two-liter (122 cu. in.) passenger cars, 300 three-liter cars, 50 four-liter passenger cars, 50 six-liter passenger cars, 15 Type K and 15 Type S passenger cars, as well as 450 trucks. It is hoped to shortly increase the production of the Gaggenau Works, the only works at which the firm produces commercial vehicles at present, to 500 per month. The production of commercial vehicles in Marienfelde near Berlin has been discontinued, the works at that place now being used as a large service station. Body construction is centralized at Sindelfingen, where all bodies for the Unterturkheim, Mannheim and Gaggenau works are built, except for standard platform truck bodies, which are being built by the truck chassis works at Gaggenau.

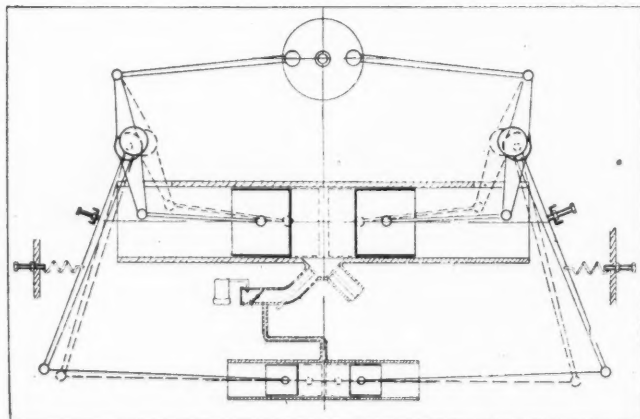


Diagram of Graf constant compression engine

AT the recent meeting of the International Aeronautic Federation the organization of a competition for light airplanes which is to touch all of the chief European capitals was proposed by the French Aero Club. It is planned to admit to the contest only light types of airplane with one or two passengers, and to make it a great propaganda event for air touring. It was pointed out that it would be possible to carry out this flight only if all of the member clubs cooperated in its organization. Plans will be discussed at the next meeting of the Federation at Brussels, June 26-29. It is planned to hold the tour in 1929.

Overseas Shipping of *Unboxed Cars* *Cutting Export Costs*

Considerable reduction in delivered price of American cars in foreign countries effected by eliminating crating and handling expenses. Plan making progress.

By A. B. Crofoot

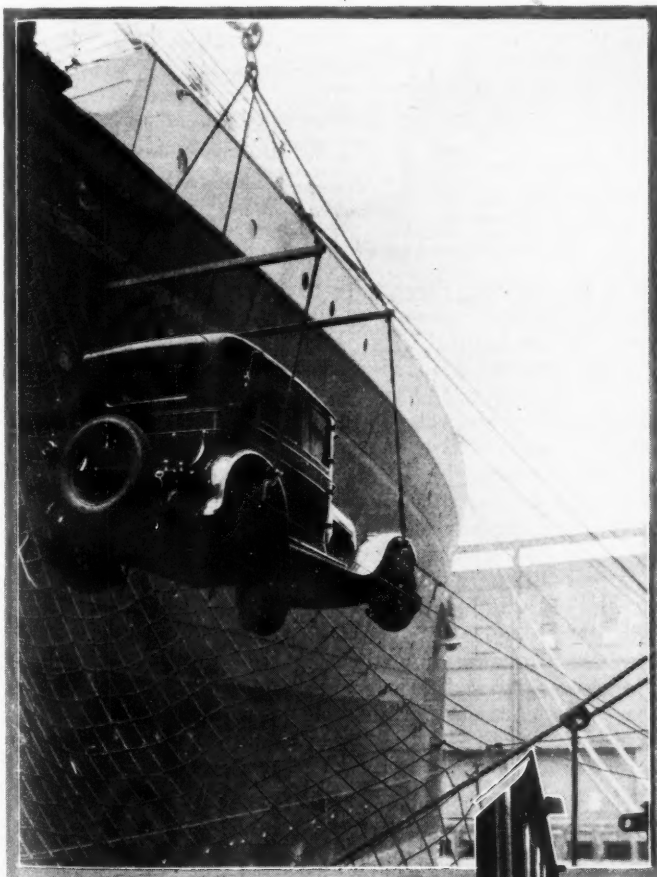
CONSIDERABLE progress has been made recently in the movement inaugurated by automotive interests to have ship lines handle export shipments of automobiles in unboxed form. The immediate object, of course, is to eliminate the expense entailed by crating and thus effect a reduction in the delivered price of the car in the country of destination.

The cost of crating must necessarily be passed on to the ultimate purchaser in the country in which the car

is sold, and American manufacturers feel that if this item can be wiped out it will mean just so much gained in meeting the increasing competition of foreign makes in nearly all overseas markets, particularly in those countries which have their own industries.

The National Automobile Chamber of Commerce recently made an analysis of the selling price in various foreign countries of a typical American car weighing 2200 lb. net and costing \$1,000 f.o.b. Detroit. It was figured that this car could be purchased in the United States for an average delivered price of about \$1,100, whereas the cost in Australia, for example, would run between \$1,600 and \$1,700, and in Austria it would be \$2,500. This additional cost is due to shipping expenses and to tariffs and registration fees of various kinds. Nothing much can be done about the latter and that is all the more reason for making every possible effort to reduce the former.

No inconsiderable part of the shipping cost is consumed either directly or indirectly in the crating that has long been necessary in overseas shipments and is still necessary in the majority of cases. The cost of the average box for a closed car is in the neighborhood of \$65, but that is only the beginning of the cost involved. The weight of the typical car referred to above, when crated for shipment, is placed at 3300 lb. and this proportion is fairly representative for all cars; the weight of the box usually runs around 50 per cent of the weight of the vehicle. Such freight rates as are based on weights are therefore increased 50 per cent by boxing.



Courtesy Panama-Pacific Line

Above—Hoisting an unboxed car aboard a Panama-Pacific Line vessel. Right—The Bernstein method of loading and unloading unboxed cars. The elevators have been specially designed for this purpose and are rigged temporarily to the side of the ship



Photo by Brown Brothers

Then there are various assessments on the shipment that are dependent upon the total value, which always includes the box. The marine insurance is computed ad valorem. Consular fees likewise are based on the total value. Import duties are assessed on the c.i.f. value of the complete package and these run as high as 45 per cent, with 33 1/3 per cent not an unusual rate for European countries. Many countries also have internal taxes and luxury taxes which are assessed on the value of the whole shipment, and some of these run as high as 12 per cent. This means that extra charges on the box alone may run up to something like \$35. And it must be borne in mind that this is figured on an average box valued at \$65. Some boxes for the larger and more expensive cars run as high as \$115.

In other words, although it may cost only \$65 to box a car for shipment abroad, the ultimate expense involved on account of this boxing may run well over \$100, by no means a negligible item on the \$1,000 car mentioned in the sample figures given by the N.A.C.C. On a \$500 car, it has been figured that the additional expense involved will run about 13 per cent of the cost of the car.

Inasmuch as most ocean freight rates are based on volume occupied, shippers attempt to economize as much as possible on the size of boxes used. This means a certain amount of disassembling and the car must then be reassembled at its destination. This, too, often involves considerable additional expense.

Although the boxes are made as strongly as possible, the pliability of the wood often permits the contents to be somewhat damaged by the impacts of handling, and frequently these damages are unobservable from the outside of the case itself.

These and other considerations have led shippers to study the possibilities of shipping cars abroad without boxing, thus eliminating all this additional expense and labor. Experiments in this direction have been somewhat limited; due in the early stages to the conservatism of the shippers, and more lately to the unadaptability of some of the principal ocean carriers.

There are now a number of lines that undertake to ship cars commercially in unboxed form. One of these lines, engaged in trans-Atlantic service, handles no other type of business and is content to operate on a one-way schedule, returning to this country in ballast. The other lines, serving some of our neighboring countries on this side of the ocean, are engaged in regular freight traffic and will accept cars either boxed or unboxed. The Arnold Bernstein Line took up the proposition three or four years ago with a converted German cruiser and now operates five ships in regular service between this country and Europe, carrying nothing but unboxed cars. The Ward Line, the Panama Line, the United Fruit Line, the American Cuban S. S. Line, the Red D Line and the Royal Dutch Line serve their respective territories with a service that includes shipping of unboxed cars.

Historically, the shipping of unboxed cars is not new.

The Nicholson Transit Co., Detroit, has been engaged in shipping unboxed cars in Great Lakes traffic for some time. The traffic handled in this way on the Lakes during 1927 has reached over 124,000 units as compared with 55,499 in 1924. Arnold Bernstein, too, had long been handling such shipments in comparatively local areas before he undertook to handle trans-oceanic shipments. He had been taking a large part of the output of Henry Ford's Copenhagen assembling plant and shipping it to Baltic and North Sea ports unboxed.

It was only about three or four years ago, however, that Bernstein undertook to make shipments across the ocean in this way. At first his efforts were looked upon

with a certain degree of skepticism by car manufacturers, but as he demonstrated the success of his scheme they became more enthusiastic and last December the Studebaker Corp. chartered one of his boats and sent over to Europe an exclusive cargo of Studebaker and Erskine cars. Emil Salmson, vice-president of the Royal Automobile Club of Sweden, president of the Swedish Automobile Dealers' Association, and Nash representative for Sweden, who was in this country a few weeks ago, has been receiving his shipments in this manner and finds it highly satisfactory.

There had been one or two earlier sporadic attempts at unboxed shipping, but most of these were rather abortive. Several years ago General Motors and other producers shipped some cars from Charleston

on boats leaving there with cargoes of cotton. Due to the lack of definite sailing schedule and the incompleteness of mechanical facilities for handling such shipments, however, this attempt was short-lived.

The method for handling this type of shipping as developed by Mr. Bernstein rather obviates the handling of other cargo on the same ships, and make it rather impracticable to take on a return cargo. He has decked his ships so that there is a minimum of lost space above and below the cars. He has also equipped his hatches with elevators so that cars can be readily moved from one deck to another in loading or unloading without the strain and bumping usually experienced in swinging them with hoists. His earlier boats took the cars in through the side via a gangplank over which they were rolled by cables attached to winches within the boats. His later equipment, however, consists of a removable elevator which is attached to the side of the ship and which lifts the cars to the deck, whence they are rolled to the hatch elevators.

Lashed to Flooring

Once on the assigned deck in the hold of the vessel, the cars are rolled in place, the wheels blocked, and the cars lashed to eye-bolts in the deck flooring. The lashing is made from the front and rear axles, and together with the blocking of the wheels, prevents movement of the car in any direction during transit. Cars have been shipped in some very rough weather in this manner and have arrived at their destination unscratched. Further protection is afforded by covering the cars with



Photo by Brown Brothers

How unboxed cars are secured and covered for export shipment in holds of Bernstein ships

cloth coverings. Arrived at their ports of destination, the cars are unloaded in the same manner as they were loaded, then rolled to freight cars or driven away.

Here again a substantial saving is effected. Boxed cars must be transported under some power other than their own, either direct to the dealers' warehouses or to some warehouse in the port of entry where they can be unboxed and driven away. As many European inland freight rates are based on weight, this means an additional cost for inland freight.

The mechanics of unboxed car handling on the other lines is simpler than that employed by the Bernstein line. Here the cars are rolled onto a semi-rigid sling and swung into the hold of the steamer as any other cargo. They are then rolled into position and blocked, lashed and covered similarly to the method used by Bernstein. This obviates the special elevator equipment used in the other type of handling, and also permits the handling of a diversified cargo. These lines handle cars in either boxed or unboxed condition.

An interesting development of the unboxed method of shipping cars is the insurance angle. At first underwriters were somewhat dubious as to the plan and rates for this type of shipment were a little higher than for boxed shipments. It was soon demonstrated, however, that claims for damages for unboxed shipments were less than for boxed shipments, and insurance rates came down so that now they are 60 per cent less than they were at first. Thus another saving in expense is effected.

The general extension of this method is now being prevented by the stand of the regular ocean carriers. For one thing, they are unwilling to put in any special equipment for handling cars in this manner. But that is not the principal drawback. These lines charge for space occupied, and there is no doubt that more space is required in the hold of a ship by an unboxed car

lashed to the deck and covered with a tarpaulin than by a case containing a car which can be placed immediately next to, or on top of, another similar case. Obviously it is impossible to load unboxed cars on top of each other but proponents of the unboxed shipping plan urge that it would be possible, where large shipments of unboxed cars are being made, to put in temporary flooring just above one layer on which another layer of cars, or of some other cargo, could be loaded. The carriers, however, have not yet seen their way clear to adopt such a policy.

Possibly the only way that this drawback can be finally met is for the carriers to adopt a uniform car rate, or a weight rate that will be no higher than the existing volumetric rate. When and if that is done, the packaging of cars for shipment abroad may become obsolete except in isolated cases.

Rates at present in vogue among those lines that do make a business of handling unboxed cars vary little from the Conference rates on boxed cars, and in one or two instances are even a trifle lower. When exporters demand the elimination of the 13 per cent additional cost which is imposed on unboxed shipments at present by the regular ocean carriers, then these lines may be forced to fall in line with the idea and the practice will become universal.

As one proponent of the scheme has pointed out, the resulting reduction in laid-down cost in the foreign market should bring a sufficient increase in shipping business to more than offset any apparent loss due to what the carriers now feel would be non-paying space in their holds. As a matter of fact, the United Kingdom Conference lines have been seriously considering the handling of shipments of this type, and it is more or less generally expected that they will soon announce their willingness to do so.

Hendrickson Rear Driving Axle Mounting

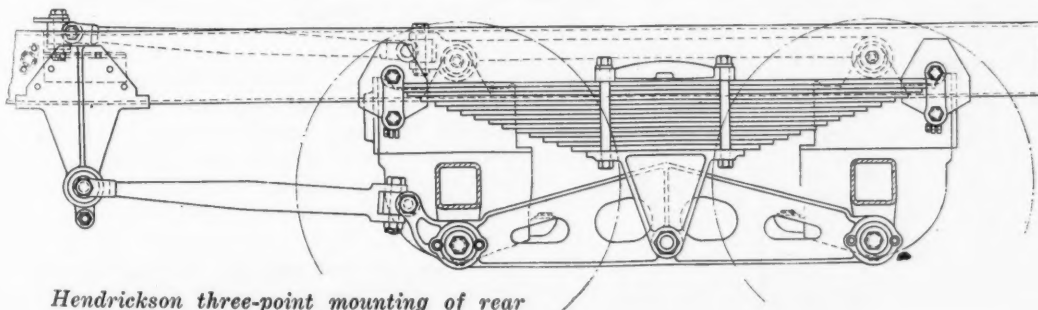
THREE-POINT mounting of the two rear driving axles is one of the features of a six-wheel truck developed by the Hendrickson Motor Truck Co., Chicago. The Hendrickson company has applied the design to 6 and 10-ton models of its own manufacture and also is selling the special parts used in the construction to other truck makers.

From the accompanying illustrations it will be noted that a bracket is clamped to the central portion of each of the rear semi-elliptic springs. A cast-steel carrier beam is supported at the lower end of each of these forked brackets by means of a ball joint. The ends of the carrier beam are hung from ball joints below the housings of the two rear axles. It is claimed that with this construction the weight of the truck takes care of most of the torque reaction on the axles. In addition, however, the two worm housings are connected by a

torque link with ball joints and the forward end of this link is in turn connected to a frame cross-member through a link with a universal joint at each end. The forward end of each carrier beam also is connected to a bracket on the frame side rail through a radius rod which has a ball joint at its forward end and another type of universal connection at the rear.

The rear axles therefore are mounted in three ball joints—one at each end of the axle housing connecting with the ends of the carrier beams and the third on the worm housing. These ball joints consist of hardened and ground steel balls working in bronze sockets, spring retained felt washers being used on each side to keep dirt out and also to prevent any of the lubricant from leaking away.

Internal type service brakes are fitted to all of the four driving wheels and are operated through a B-K booster, while the emergency brake is located on the drive shaft. The drive to the forward axle is in the usual way, and the worm shaft of this axle is connected to that on the rear axle through a shaft incorporating two universal joints.



Hendrickson three-point mounting of rear driving axles on six-wheel truck

Aero Engine of Fixed Radial Type Designed by Cameron

Product of National Aero Corp. has seven cylinders and is air-cooled. Piston displacement 420 cu. in. Arrangement of valves a feature. Two compression ratios.

By P. M. Heldt

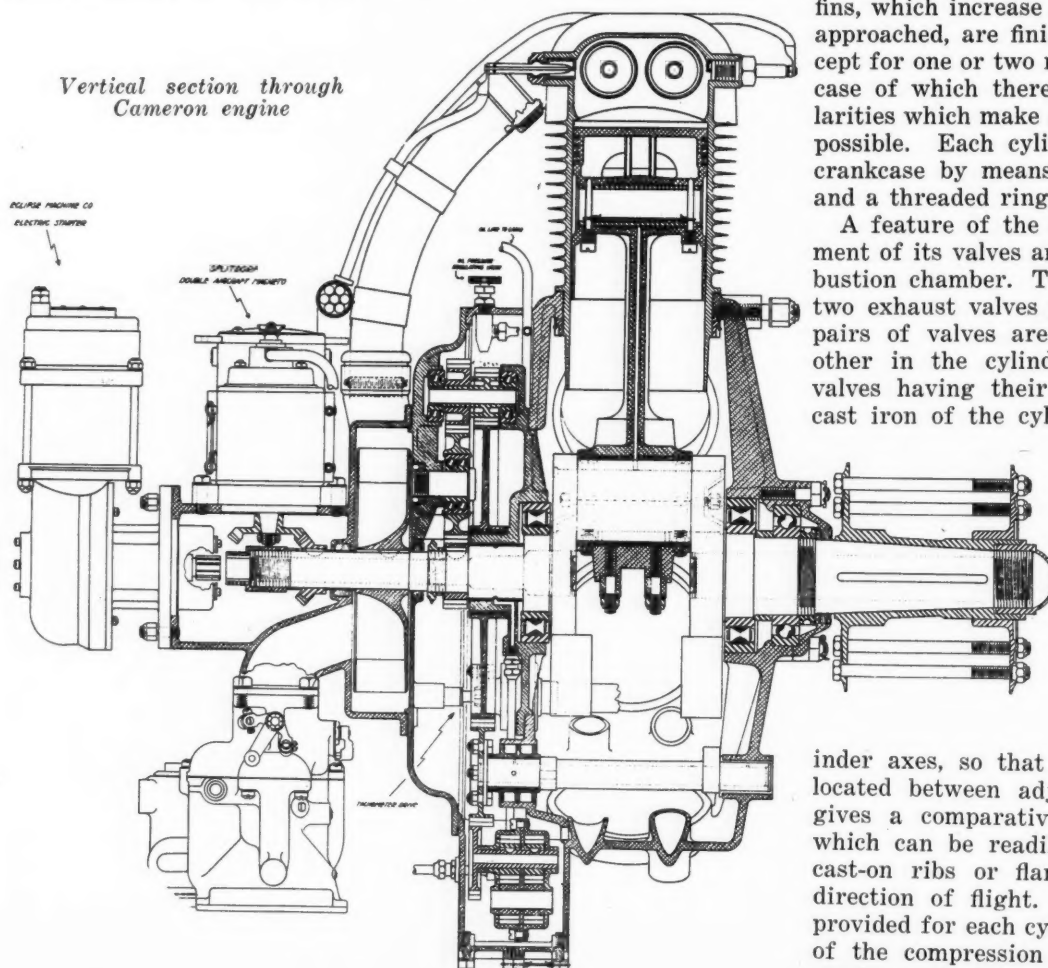
A SEVEN-CYLINDER fixed radial air-cooled aircraft engine has been built by the National Aero Corp. of 1123 Broadway, New York, from designs of E. S. Cameron, who for a good many years was active in the automobile industry. The engine has a bore of $4\frac{1}{8}$ and a stroke of $4\frac{1}{2}$ in., giving it a displacement of 420 cu. in. It is said to develop 100 hp. at 1800 r.p.m., and, weighing 280 lb. complete, its specific output is 1 hp. for every 2.8 lb. of dry weight and 1 hp. for every 4.2 cu. in. of displacement. It is planned to build the engine with two different compression ratios, a ratio of 5.4 to 1 for installations

where ordinary commercial fuels may have to be used, and a ratio of 6 to 1 where only aviation gasoline is to be used.

The crankcase consists of an aluminum casting, with an opening at one end through which the crankshaft can be introduced. This opening is closed by a cover plate, and the two anti-friction type main bearings for the crankshaft are mounted in the end wall of the crankcase and in the cover plate respectively.

High tensile cast iron alloyed with nickel and chromium is used for the cylinder castings which have the cylinder heads cast integral with them. The cooling fins, which increase in depth as the head is approached, are finished by machining, except for one or two nearest the head, in the case of which there are necessary irregularities which make a turning operation impossible. Each cylinder is secured to the crankcase by means of an integral flange and a threaded ring.

A feature of the engine is the arrangement of its valves and the form of its combustion chamber. There are two inlet and two exhaust valves per cylinder. The two pairs of valves are located opposite each other in the cylinder head, the exhaust valves having their seats directly on the cast iron of the cylinder casting, and the inlet valves having bronze seats inserted in an aluminum inlet manifold which is held to the cylinder head by four studs. The stems of all four valves are parallel to the plane through the cylinder axes, so that the valve springs are located between adjacent cylinders. This gives a comparatively flat cylinder head which can be readily cooled by means of cast-on ribs or flanges extending in the direction of flight. Two spark plugs are provided for each cylinder, at opposite ends of the compression chamber, and the incoming cool charge first fans the exposed



inner ends of the spark plugs and then sweeps over the exhaust valve heads, all of which should help in preventing trouble from self-ignition and detonation.

The valve operating mechanism, also, is out of the ordinary. In a housing at the forward side of the crankcase is arranged the timing gear, which comprises a cam gear pinion on the crankshaft, a number of small intermediate or idler gears and a large idler gear mounted freely on the hub of the crankcase cover plate and meshing with gears on seven camshafts, one for each cylinder. The gearing, of course, is so proportioned that each camshaft makes one revolution to every two of the crankshaft. Each camshaft carries one inlet and one exhaust cam and through these cams acts on rocker shafts which extend parallel with the cylinders up to the valves. The rocker shafts at their outer end are provided with arms, but these do not actuate the valves directly. Intermediate shoes or sliding members of light alloy are used which protect the valves against all side thrust and thus minimize the wear of the valve stem guides. The intermediate member is a duralumin forging and slides on a hollow, hardened and ground steel pin. The hole in this pin is closed by a machine screw at the end and the pin is filled with graphite grease. This grease feeds out through a radial hole to both the sliding surface and a roller carried by the sliding piece and on which the lever arm on the rocker shaft acts.

Valve Lifts Different

All of the four valves have a clear diameter of $1\frac{3}{4}$ in. but the lifts are different, the inlet valves having a lift of $\frac{5}{16}$ in. and the exhausts of $\frac{3}{8}$ in. Operation of the exhaust valves is through the same sort of mechanism as that of the inlet valves.

The combustible charge for the engine is prepared by a Zenith carburetor of $1\frac{3}{4}$ in. size. This feeds through a vertical outlet to the chamber of a blower located in front of the timing gear housing. This blower, as may be seen from the sectional view, is of the centrifugal type and serves to mildly supercharge the cylinders. The chief object of the blower appears to be to insure a thorough intermixing of the fuel and air and consequent equal distribution. The inlet to the blower from the carburetor naturally is near the center, and there are seven radial outlets from the blower housing, one to each of the inlet manifolds. These connections between the blower and the inlet manifolds are by duralumin tubes which are connected at their inner end by means of a gland nut and packing and at the inlet manifold end by means of a cap over the flanged end of the tube.

As in all engines of this general type, the crankshaft has only a single throw and is provided with counter-weights for balancing purposes. It is made of a high-carbon chrome-nickel steel forging. Radial loads on the crankshaft are taken up by the two main bearings, which are Hoffman ball bearings, while all thrust load due to the propeller, etc., is taken up on a deep-groove ball bearing at the propeller end.

Pistons are cast of aluminum alloy and are fitted with four rings each. Piston pins are secured in the piston bosses by a pin-type set screw in each of the bosses. While the usual arrangement of one master connecting rod and articulated smaller rods is employed, the connection of the articulated rods to the master rods is worked out in a novel way. All connecting rods are duralumin forgings. The master rod, which has a center-to-center length of 9 in., has a very liberal bearing on the crank pin— $2\frac{1}{2}$ by $3\frac{1}{2}$ in. The articu-

lated rods are forged with the joint pin integral and this pin has a bearing in hardened and ground steel bushings in the master rod. Caps for the bearings of the articulated rods on the master rod are secured by means of studs screwed into the head of the master rod and headed over on the inside, so that it is not necessary to rely on the holding power of threads in the duralumin. This construction is claimed to make it possible to bring the bearings of the articulated rods closer to the crankpin axis. Each cap stud serves for two adjacent caps.

Lubrication is by the dry sump system, and the double gear-type pump, driven from the timing gears and located in a special compartment at the bottom of the crankcase, is clearly visible in the sectional view. Oil enters the hollow crankshaft at a plain bearing adjacent to the roller bearing mounted in the cover plate and passes through the drilled-out connecting rod shank to the piston pin bearing and to the cylinder wall. All of the bearings of the articulated connecting rods also are lubricated by the pressure system. The bearing of the master connecting rod on the crankpin is babbitted, the babbitt being poured directly into the head of the rod.

Ignition is by a Splitdorf double magneto which generates four double sparks per revolution of its armature. This magneto is installed on a bracket over the rear extension of the crankshaft and is driven from the crankshaft through bevel gearing at such a ratio that its armature makes 21 revolutions to 24 of the crankshaft. Since the armature generates four double sparks per revolution, it will generate 84 sparks for 24 crankshaft revolutions or seven sparks for two crankshaft revolutions, which is the number required. A separate distributor is provided in the magneto for the sparks to each set of plugs, and all high tension cables are carried inside a cable guard of duralumin tubing.

An Eclipse electric starter is fitted at the extreme rear end of the engine. It is mounted on a vertical axis and is provided with a flywheel which stores up energy sufficient to carry the engine over the first compression. Engagement between the starter and the engine is effected by means of a screw shift.

Power Agitating Unit

BINKS SPRAY EQUIPMENT CO., Chicago, has developed a power agitating unit, equipped with an air motor for use in agitating standard lacquer, paint and varnish drums and barrels. The agitating unit is operated by an air motor provided with a control valve to give various speeds. The motor has but three moving parts with hardened and ground wearing surfaces and is said to be simple in construction and fool-proof.

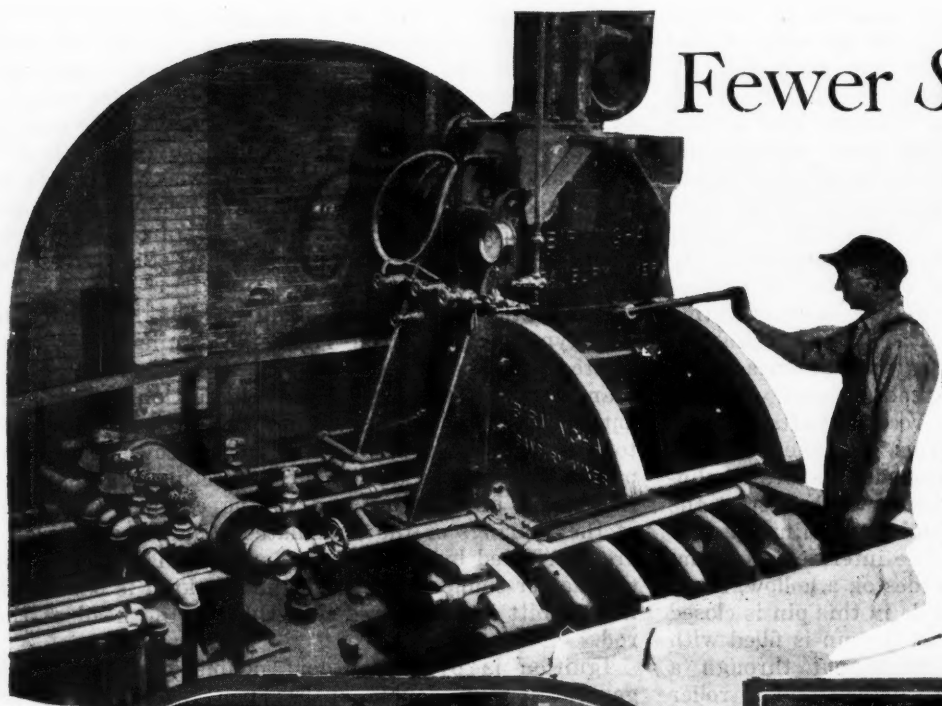
Occasional lubrication is all the attention it requires and it consumes 3 cu. ft. of air per minute when running at high speed. The agitator shaft is driven through a bronze steel reduction gear packed in lubricant. The bearings in this assembly are of bronze.

Binks agitating unit applied to container

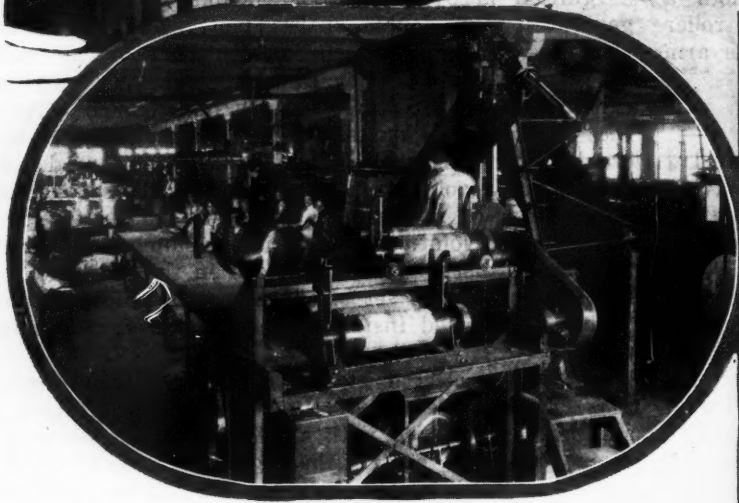


Fewer Sizes Would Production

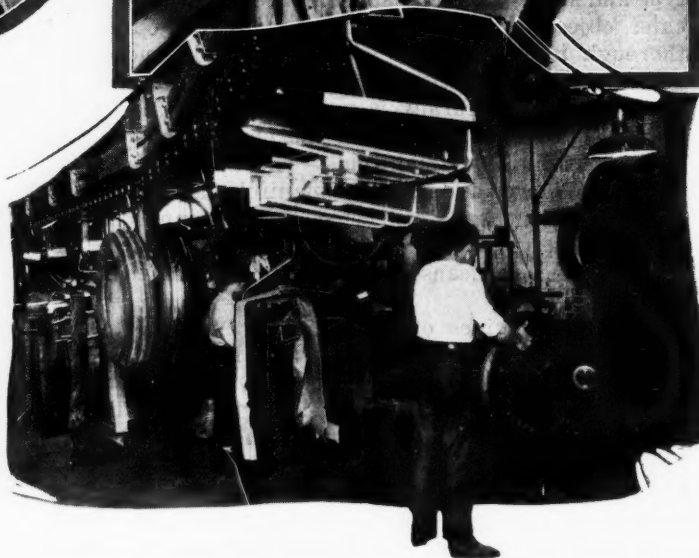
By A. F.
Denham



Left—Banbury mixer used in the Ajax rubber plant for mixing crude rubber. Below—Automatic machine which cuts tread stock to required size



Above—Machine for automatically cutting the tire fabric to size



Above—The tire builder has to take only two steps to remove the material from the conveyor, build up a tire and hang it back on the conveyor

WITH the intense discussion which has permeated the automotive industry lately on the necessity for reducing the number of balloon tire sizes, it is rather interesting to consider how such a reduction would affect the makers of tires from a production and cost angle. Recently the Ajax Rubber Co. spent about \$1,000,000 for plant expansion, most of which was given over to the purchase of new machinery. On analyzing the new equipment it is demonstrated that the methods now used for manufacturing tires are quite similar in some respects to those used in the manufacture of automobiles. Conveyor systems are used practically entirely for the handling of materials. Machines are more standardized to provide maximum output of a given size at minimum cost.

Naturally, as in an automobile plant designed for large production at low cost, the addition of new models upsets the equilibrium of operations. From the tire manufacturer's point of view, standardization on a half-dozen or a dozen tire sizes of one type

would enable him to so standardize his equipment as to still further lower the costs of manufacture.

Mixing of crude rubber with other ingredients at the Ajax plant is performed in a Banbury mixer handling about 800 lb. every 15 minutes, a con-

Simplify Tire Problems

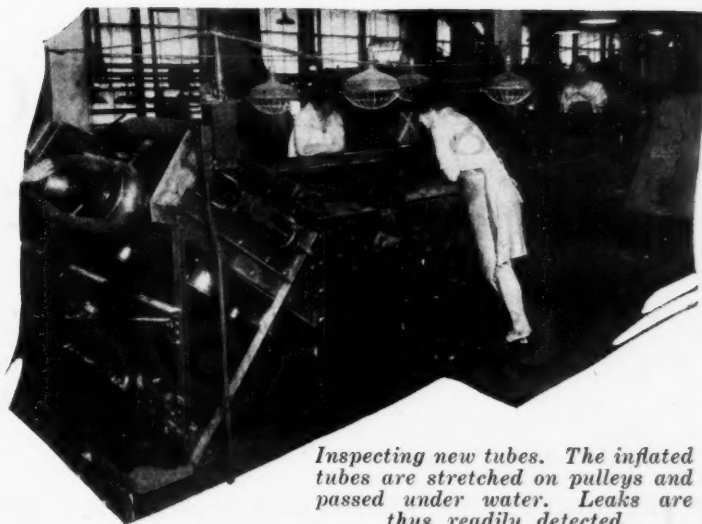
Modern manufacturing methods closely resemble those followed in automotive plants.

veyor taking the mixture from here to the mills used for further mixing and working of the stock on the floor below. Only three of these latter mills are used for the entire production of tires, giving an idea of the capacity rating.

After passing through another batch of reworking mills, and the tread calendars, the finished tread in a continuous piece passes onto a belt conveyor which takes the strip to the floor above, passes it through a cooling tank and into a cutter. Since the belt conveyor is chain driven, it is possible to make the cutting to length automatic by regulating the machine to make a cut for every so many links in the chain.

An automatic cutter is also used for the fabric, cutting it on a bias to the required width for which it is set. The finished cut and prepared which go to make up a tire are collected by an overhead conveyor provided with "hooks," one for each tire, on which are hung all its component parts, including corded fabric, breaker strips, chafing or protection and reinforcing strips, tread, and other parts.

The "basket" conveyor takes the material to the battery of tire building machines, where the operator removes the material, builds up a tire therefrom and hangs it back on to the conveyor which takes the tire on to the pneumatic presses where curing molds and airbags are attached. Another conveyor takes the tire on its next journey—to the curing room, where it is automatically unloaded from the chain conveyor and dropped on a belt conveyor which takes it to a point adjacent to the moving mold conveyor. A workman here lifts each tire and drops it in a mold going to the vulcanizer.



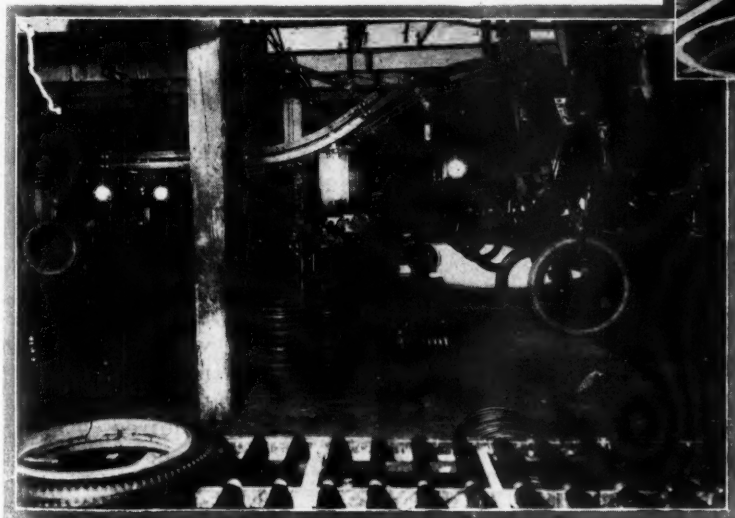
Inspecting new tubes. The inflated tubes are stretched on pulleys and passed under water. Leaks are thus readily detected

A semi-automatic machine loads the molds into the vulcanizer directly from the mold conveyor. Fastening and lifting of the vulcanizer covers is performed automatically by the ram which serves to hold the molds together during the cure. To unload, the ram lifts the cover and molds, until the cover engages in an overhead hook which supports it while the vulcanizer is unloaded and reloaded.

Conveyors are again used to take the finished tires to the inspection and wrapping rooms. From there they are taken to the five-story building serving as a stockroom. The tires unload themselves automatically on the desired floor by means of a device on each carrying hook which is so designed that it can be set to drop the tire at the correct floor.



Above—Steel plate mold conveyors and tire vulcanizers. Left—This view, taken in the vulcanizing room, gives an idea of the network of conveyor systems employed



Of course there are other intermediate minor operations which have not been covered here, such as trimming, coating, etc., but it should be evident from the foregoing that at least in the Ajax plant manufacture of tires has become so nearly automatic that additional sizes mean largely duplication in machinery to handle them, increasing the overhead and therefore the cost of the average tire to the manufacturer and the consumer.

Herringbone Gears Coming Into Use in Automotive Field

Several applications already made on passenger cars, buses, trucks and railcars. Sykes generator specially adapted for this class of work. Makes teeth continuous.

HERRINGBONE gears, while used largely in industrial work and for marine transmissions, have not been used to any great extent in the automotive field so far. Recently, however, several applications have been made on passenger cars, on buses and trucks, and also on railcars, and to all appearances this type of gear will become a more important factor in the industry in the near future.

Herringbone gears have been used to a small extent for front end drives of automobile and marine engines, their advantage for this work being that they eliminate the end thrust which must always be provided for when helical gears are used. There are certain limitations connected with the assembly of parts if herringbone-type front end gears are used, as the shafts cannot be slid into place endwise after the gears are assembled on them, but this difficulty can be overcome by putting the shafts in place first and then slipping the gears over them and keying or bolting them on.

A more extensive field of application for the herringbone gear is in transmissions of the constant mesh or positive clutch type. These are used more particularly for the heavier types of vehicle, such as trucks, buses and railcars. These gears are also used in axles having a so-called double reduction drive, that is, one reduction by bevel gears and the other by double helical gears, these latter taking the place of the spur gears more commonly used for this type of final drive. The chief incentive to the adoption of herringbone gears in all cases is the desire to secure a smooth, silent drive.

A special ma-

chine for generating herringbone gears is made under the patents of W. E. Sykes by the Farrel-Birmingham Co., Inc., of Buffalo, N. Y. This herringbone gear generator permits of making the teeth continuous, that is, without a groove at the center of the face separating two sets of teeth. Such gears naturally have a greater capacity than gears of the same overall dimensions but with a groove at the center, and the difference in strength is not fully represented by the amount of tooth face which may be considered cut away.

Gears for automotive purposes are cut on the No. 2-A Sykes gear generator, which has a capacity up to 24 in. diameter and up to 8 in. face. A standard helix angle of 30 deg. is used for most of the work, but for automotive purposes the machine can be fitted to generate teeth with a helix angle of 45 deg., which is said to give unusually quiet action.

A photographic view of the No. 2-A generator is shown in Fig. 1 and a diagram of its indexing mechanism in Fig. 2. The cutters used with this generator are of the pinion type and have teeth whose tooth contours form sections of an involute curve. The tooth contours of these cutters are generated by a grinding process after the cutters are hardened. The generating motion required to operate this cutter is rotary and therefore can be obtained by means of simple mechanism. Another advantage claimed for the pinion-type cutter is that it has a great length of cutting edge, all of which is equally utilized, hence resharpening is required only at long intervals. This is of importance

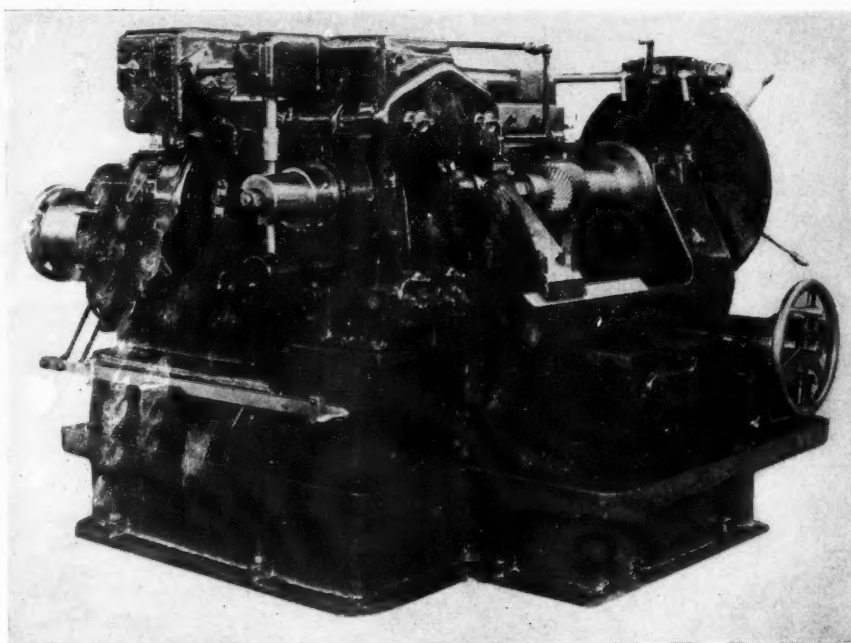


Fig. 1. Sykes No. 2-A gear generator

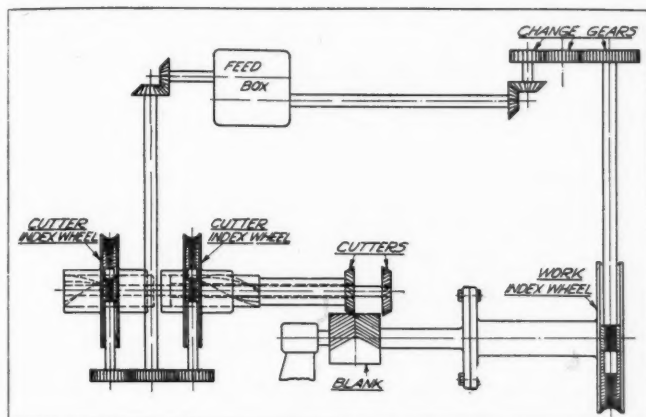


Fig. 2. Diagram of Sykes gear generator indexing mechanism

especially when cutting blanks of alloy steel, which is comparatively hard and therefore has a tendency to dull cutters quickly, as the changing of cutters while working on a gear is inconvenient and conducive to errors.

Cutters are sharpened by grinding them on their face. The teeth have relief on all surfaces, but since the base circle is the same for all sections of the tooth, such sharpening does not alter the form of gear tooth generated.

In operating the Sykes gear generator the blank and the cutters are slowly revolved on their axes at the same relative speeds as if the teeth were already formed on the blank and it were meshed with the cutter. These rotary motions are given to the blank and cutter by the mechanism shown in Fig. 2. So far as the mechanism illustrated is concerned, the motion originates in the feed box and is transmitted through bevel and spur gears to the cutter index wheels on the one hand and to the work index wheel on the other, both of which are worm wheels. All index wheels—and hence the cutters and the work—revolve continuously in one direction. If the mechanism is to be reset for cutting a gear with a different number of teeth, the change gears have to be interchanged.

In addition to the generating motion the cutters have three other simple motions which are combined into a cyclic motion. They are reciprocated in the direction of their common axis by means of a crank mechanism; they are reciprocated angularly by means of master guide screws, and they are given a relief motion for the return stroke by means of a mechanism receiving its motion from the crank which produces the reciprocating motion of the carriage.

The main drive for the crank operating the reciprocating carriage is through a four-speed gear box containing Sykes herringbone constant mesh gears. These gears are engaged by means of internal-external gear clutches operated by a lever at the side. This gives a sufficient range of reciprocating speeds for all sizes of gear within the capacity of the machine.

In order to make it possible to vary the length of the reciprocating motion, as required for gears of different widths of face, the crank through which the motion is imparted to the reciprocating carriage is made with an adjustable crankpin. The crankshaft and crank disk are made from a high-tensile steel forging. Three T-slots are machined in the crank disk, one a radial slot and the other two parallel to the former. The crankpin is secured in the central slot by means of an adjusting screw. A flange forged on

the crankpin bears on the face of the crank disk, and the pin is further secured to the disk by means of bolts in the T slots extending parallel with the radial one.

The reciprocating carriage is of deep-box section, and adjustment in its guide is made by means of two wedges at the ends of the main bed. Lubrication of the guides is effected from a well within the carriage. Cutter brackets are mounted on the reciprocating carriage and can be adjusted thereon lengthwise by means of two screws passing through the register slot therein. After adjustment the brackets are locked in position on the carriage by means of two screws.

For the return stroke the cutters are automatically and positively relieved by a mechanism receiving its motion from the crankshaft. The work saddle is so arranged that pinions integral with their shaft (so-called stem pinions) can be accommodated as well as the regular gears with a bore through them. A feature in connection with the change gear for the feed that is worth mentioning is that the driving pinion must have the same number of teeth as the cutter and the driven gear the same number as are to be cut in the blank. This eliminates the need for calculations on the part of the operator. Of course, any other pair of gears having the same ratio can also be used.

Depth feed is automatic, and can be set to cause the cutters to cut to full depth in one or more cuts. The depth of the several cuts may be predetermined by the operator by suitably setting the dogs on the ratchet wheel.

A feature of the generator is its adaptability. It can be used not only for generating herringbone gears but also for helical and spur gears. A single helical gear is generated when only one of the cutters is acting, although two cutters can be used also by making the two master guide screws of the same hand.

The machine is said to be particularly adapted for

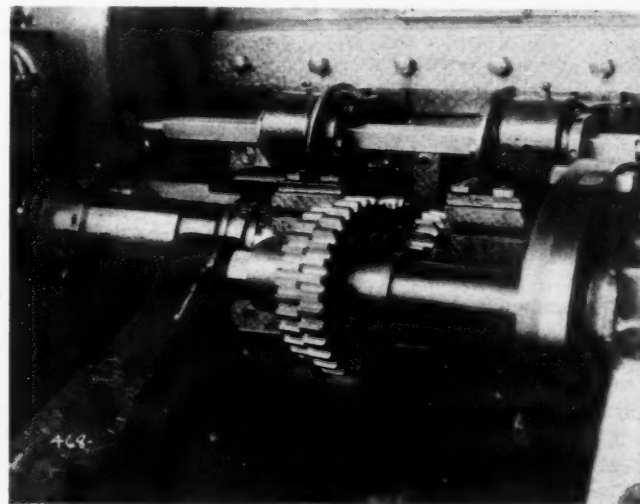


Fig. 3. Set-up for generation of cluster gears

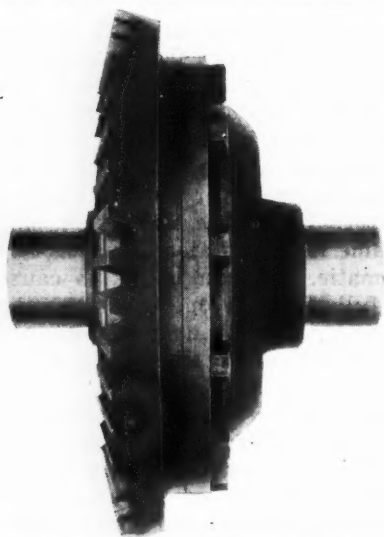
the simultaneous generation of so-called cluster gears, that is, two concentric gears of different diameters formed in a single unit, as often used in the larger sizes of automobile transmissions. Two cutters of different size are then used, and the two gears are cut simultaneously. This insures concentricity of pitch circles and also results in reducing the time required per unit. This method of operation is illustrated in Fig. 3.

NEW DEVELOPMENTS—Automotive

Krohn Kompensator

THE Krohn Kompensator, recently developed by John Krohn and being manufactured by H. McFarlane Co., Chicago, is a differential for cars and trucks which compensates for differences in tractive resistance of the driving wheels as well as for differences in their relative speeds.

The Kompensator transmits driving force to the wheels in proportion to the road surface characteristics,



Krohn Kompensator assembly showing compact construction made possible by nesting of gears

by creating an internal resistance in the device as soon as abnormal differences in speed of the driving wheels develop. This permits moderate, but prevents excessive differences in speed.

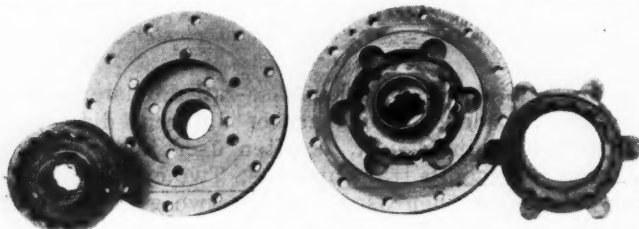
Outside of the enclosing case, which is somewhat similar to an ordinary differential, and to which the ring gear of driven gear may be bolted or riveted, there are but three working parts. From the case the drive is taken by a central member in the

form of a ring which has on its periphery a number of slightly rounded square lugs engaging loosely with notches machined in one half-case where the other half bolts to it.

The lugs to the central member, or combination gear plate, have at all times a solid bearing against some of the faces of the notches without lost motion or backlash, but lateral clearance between the two members is provided, thus permitting motion in a small circular path somewhat on the order of an Oldham coupling.

This construction permits the central member to occupy any suitable eccentric position around its circular path, but still maintain its driving connection with the case.

This central member carries on one side an external gear and on the other an internal gear, both formed integrally with it. Two mating gears mesh with these



Disassembled view of Krohn Kompensator showing the two half-cases with one gear in place, the combination gear plate on the right and the other gear on the left

and are splined to the corresponding axle shaft sections which they drive.

There are, therefore, two external-internal gear sets of the eccentric type driving the two axle sections and any relative angular motion between them must necessarily be in the reverse direction because the driver of one set is in internal mesh with an external gear while the driver of the other is in external mesh with an internal gear.

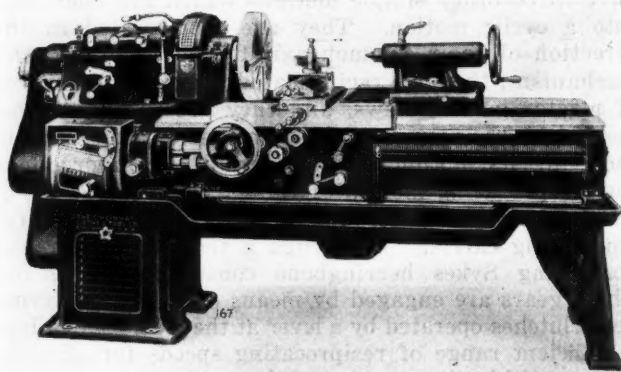
Gear teeth are of prolate cycloidal form, generated continuously by vertical milling. Teeth of one gear are in apparent contact with all the teeth of the mate at all times, effectively counteracting any tendency to be forced apart.

When differential motion occurs to the angular extent of one tooth, one axle shaft recedes and the other advances, the combination gear plate, at the same time, completing almost a full turn on its circular path without changing its angular position relative to the case.

The number of gyrations on its circular path which the combination gear plate will have to make in one complete revolution difference between the two axle shafts corresponds to the relative number of teeth in the gears. This being, in effect, a gearing-up device on one side and a gearing-down device on the other, with ratios of either 1 to 15 or 1 to 20, it is apparent that quite rapid gyratory motion is induced in the combination gear plate even at slow differential speeds.

Comparatively high step-up gear ratios with small gear diameter offer considerable resistance to motion and it is this resistance which is utilized in the Krohn Kompensator. It is an entirely free differential at the slow speeds of ordinary differentiation but when one wheel is on a slippery spot or momentarily off the ground very pronounced resistance to motion is induced in the differential mechanism.

Geared Head Lathe



Cincinnati geared head lathe

A GEARED head lathe with the motor mounted in the cabinet leg is the newest product of the Cincinnati Lathe & Tool Co., Cincinnati. This new machine is furnished in 16, 18 and 20 in. sizes, equipped for either silent chain or belt drive. A removable panel in the cabinet leg permits the installation of any size or type, ac. or dc. motor.

The lathe has the Cincinnati quick change gearbox

Parts, Accessories and Production Tools

giving an unlimited range of threads and feeds. Twelve spindle speeds are provided. All gears and shafts in the head are of manganese chrome steel, heat-treated and ground.

The clutch is of the compression disk type. The index plate on the front of the head shows the lever position for each spindle.

Drum Type Switches

GENERAL ELECTRIC CO. announces the development of three new drum type switches for use with squirrel cage and slip-ring motors, designed particularly for the control of small hoists, cranes, machine tools, etc.

The CR-3200-1250-A is a primary resistance drum switch for squirrel cage motors providing four points forward and four reverse. It is suitable for motors that do not have an overhauling load.

The CR-3200-1250-B is a primary resistance switch for squirrel cage motors having four points forward and one reverse. This is suitable for motors where there is an overhauling load.

The CR-3202-1308-A is a primary and secondary reversing switch for slip ring motors providing five points forward and five reverse. It is suitable for starting or speed-regulating duty and for use with 220, 440 and 550-volt motors rated 15 hp. and less where a five point switch would be chosen.

Die Casting Machine

THE Madison-Kipp Corp., Madison, Wis., has been so successful in developing a die casting machine and a complete die casting service for the design and construction of dies for its own use that it now is offering both machine and service to the public.

The die casting machine is completely automatic in operation, requires but one operator and is equipped with adequate safety devices to protect the operator, and to cover the movement of the metal, the dies and the cores. Manipulation of a single lever starts the die casting cycle, leaving the operator free to provide new metal, clean and oil the machine or watch the castings.

The machine is operated by a 2 hp. multi-speed motor and operates at rates of 4, 6, 8 or 12 shots per minute. The machine is so constructed that cores can be pulled

only in the proper order and metal cannot be shot unless the die is closed and the goose neck in the casting position.

An arrangement of cams provides acceleration and deceleration of the movable half of the die when the two halves are brought together and when they are drawn apart. The goose neck automatically dips into the metal pot and the shot of metal forced into the die.

A firebrick-lined, cast-iron furnace is furnished and a cast-iron pot which is removable from the furnace compartment. The furnace rests on the base and can be removed if necessary. Madison-Kipp automatic lubrication is provided. Dimensions of the machine are 10 ft. long by 34½ in. wide by 4 ft. 3 in. high.

Ames Inspection Device

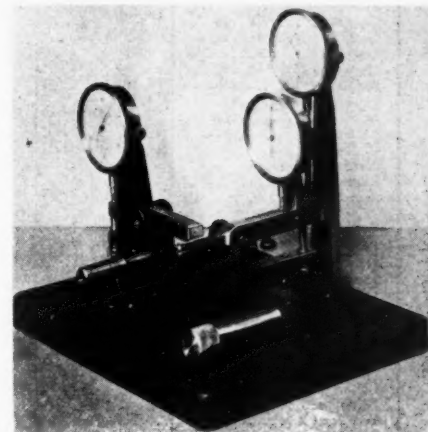
BC. AMES CO., Waltham, Mass., has recently developed a special inspection device whereby three dimensional characteristics of valve stem bushings are measured simultaneously and with great accuracy.

The external diameter can be measured within 0.0005 in. tolerance and the internal diameter within 0.0005 in. tolerance at the same time the eccentricity of the internal diameter with respect to the external diameter is measured.

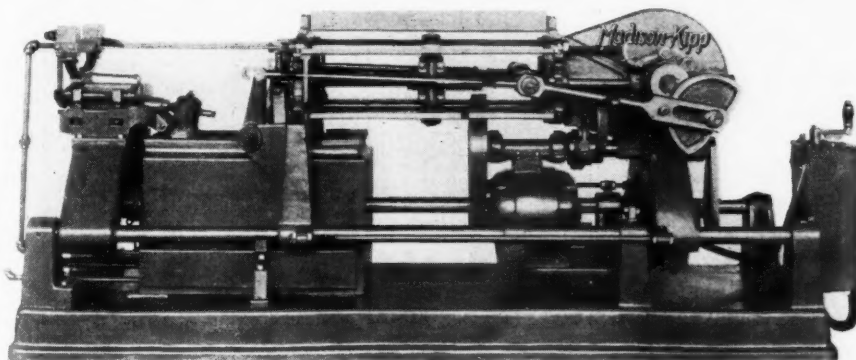
The valve stem bushing is placed on the "V" as shown in the accompanying illustration, and pushed forward to encompass the double lever which lies in the plane of the bushing axis. Two dial micrometers are connected to this lever, one being mounted on the lever and the other on an extension from the instrument base.

The two points of the double lever contact with the bore of the bushing, one at the top and one at the bottom, opposite. This arrangement of levers permits the internal diameter to be read directly while the third dial measures external diameter.

Eccentricity is measured by turning the bushing on the V. In operation the three dial faces are covered except for a slit showing the permissible tolerance so that the inspector merely looks for the pointer on the dials, which, if absent in one or more dials, means a rejected piece.



Ames valve stem bushing inspection device



Madison-Kipp die casting machine

U. S. Exports of Cars, Trucks, Tires and Parts

COUNTRIES	PASSENGER CARS										TRUCKS					
	Up to \$500		\$500 to \$800		\$800 to \$1,200		\$1,200 to \$2,000		Over \$2,000		Up to 1 Ton		1 to 2½ Tons		Over 2½ Tons	
	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value
Austria					6	\$5,245	3	\$3,552								
Azores and Madeira Islands			1	\$628	3	2,401	1	1,310								
Belgium	3	\$1,098	361	222,236	687	628,516	187	205,401	94	\$236,634	389	\$170,129	6	\$4,217		
Bulgaria																
Czechoslovakia			14	7,500	14	10,253	8	9,816	4	7,654	3	1,598				
Denmark and Faroe Is.			10	6,240	249	210,708	192	172,578	17	47,402	388	170,508	15	17,936		
Estonia			3	1,917	9	6,600	4	4,463								
Finland			7	4,690	69	60,089	34	42,488	8	22,019	3	2,978	13	18,013		
France	23	9,250			77	75,976	73	93,273	42	99,095	41	19,602	1	1,238		
Germany	23	10,595	16	8,556	512	368,470	117	134,097	66	172,753	103	46,359				
Gibraltar																
Greece			1	664	24	18,896	5	6,104			19	13,578	11	12,780	1	\$5,506
Hungary					6	4,900	5	5,403	3	8,342						
Iceland																
Italy			2	1,000	37	32,006	55	66,626	14	28,056			5	6,981	2	4,028
Latvia					2	1,520							1	1,542		
Lithuania					5	3,896	1	1,023								
Malta, Gozo and Cyprus Is.					1	747	2	2,194								
Netherlands	7	3,060	1	655	143	119,126	75	90,964	34	68,188	2	804				
Norway	1	300	2	1,500	34	29,725	12	13,112	12	25,963	7	1,257	6	8,617		
Poland and Dantzic			11	6,195	38	26,461	13	15,615	2	4,795	1	5,483	18	29,619		
Portugal			23	12,956	16	14,175	17	21,774	3	6,832	16	10,250	9	12,063		
Rumania	1	430	4	3,056	48	41,939	14	18,565	1	3,311	15	11,144	3	2,897		
Russia															3	15,817
Spain	7	3,091	47	29,806	129	98,052	27	33,190	36	90,898	13	9,070	21	28,281		
Sweden	11	4,940	40	25,386	204	155,721	217	299,508	19	42,735	234	47,136	27	37,979		
Switzerland			25	14,940	58	45,393	10	12,594	18	37,127						
Turkey			6	3,536	18	15,404	7	7,833	2	4,288	2	918				
United Kingdom	176	70,793	51	24,894	146	124,822	46	63,748	81	178,870	211	98,728	42	57,838		
Irish Free State					3	2,907	3	4,621					1	1,064		
Yugoslavia and Albania			7	4,122	4	3,039	4	4,711	6	18,431						
United States																
British Honduras																
Canada	259	77,848	190	121,446	123	113,647	164	237,765	66	199,511	57	32,213	113	175,429	36	123,009
Costa Rica			2	1,467	24	21,689	7	7,809	1	1,896	10	6,859	8	9,722		
Guatemala	1	400			11	10,568	15	19,563	9	20,619	6	6,136	23	23,566		
Honduras			4	1,455	2	1,955	4	4,917			1	1,020	3	4,772		
Nicaragua	10	2,538	4	2,706							3	1,529	1	1,589		
Panama			3	1,610	33	29,442	21	28,195	15	37,116	8	4,297	14	23,600		
Salvador			4	2,608	6	5,690	10	13,524	5	12,404	8	4,657	7	10,823	2	6,340
Mexico	153	31,439	75	50,274	114	113,723	84	110,061	29	75,646	75	46,873	33	40,321	3	3,388
Miquelon																
Newfoundland			1	800			1	989								
Barbados			6	3,855	3	2,269	1	1,069								
Jamaica	3	950	3	1,895	33	25,406	7	8,737	3	6,866			12	15,984	6	12,600
Trinidad and Tobago					7	6,160	3	3,300								
Other British West Indies			1	1,000	3	2,388	2	2,288								
Cuba	11	4,297	35	21,663	61	60,087	58	78,015	33	91,264	34	24,542	46	147,886	19	84,691
Dominican Republic	20	12,284	27	13,282	35	30,548	7	8,151	7	19,515	4	3,024	2	2,721		
Dutch West Indies			1	698	12	11,421	4	4,183			29	17,413	6	4,158		
French West Indies											2	1,138				
Haiti			4	2,721	18	17,133	5	6,486	3	5,738			7	12,474		
Virgin Islands	1	106	1	600	1	1,000	1	1,425			3	2,543	1	600	2	5,309
Argentina	288	107,325	386	197,278	933	791,135	177	218,805	84	206,618	953	488,494	208	353,716	16	52,615
Bolivia					7	2,721	1	1,018			1	609	3	3,054		
Brazil	207	78,753	34	24,313	250	208,152	60	74,846	17	40,869	891	401,427	60	83,052	2	7,833
Chile	8	2,981	2	1,311	38	31,554	22	25,954	11	22,441	24	11,925	21	36,190	5	22,595
Colombia	1	495	13	8,147	121	101,541	75	92,988	22	51,932	22	23,854	91	161,780	10	28,702
Ecuador					4	3,160	3	3,776					2	2,335		
British Guiana					1	776										
French Guiana																
Dutch Guiana																
Paraguay					3	2,685										
Peru	7	2,658	13	7,907	32	28,230	16	18,026			27	21,741	9	15,646		
Uruguay			31	19,833	169	148,322	26	29,907	6	15,788	21	11,768	7	8,732	11	11,576
Venezuela			8	5,726	47	39,460	25	29,197	12	31,811	14	13,213	25	34,373	1	2,800
Aden																
British India	1	426	26	18,298	224	186,606	26	38,521	12	30,147	176	140,668	16	18,217		
Ceylon			3	2,685	44	37,230	8	10,364	3	5,631	2	1,834	29	40,998		
Straits Settlements	20	7,778	25	17,722	40	33,283	4	5,115	3	6,515			4	5,270		
China			1	600	15	14,390	3	4,644	5	12,371	1	1,417	1	1,964		
Java and Madura	3	2,640	221	111,231	225	173,818	53	65,403	4	9,308	227	18,807	18	23,944		
Other Dutch East Indies			6	3,336	30	23,353	1	1,492	4	7,437	22	15,619	2	1,835		
French Indo-China																
Hejaz, Arabia and Iraq	4	1,916	7	5,093	28	23,750	2	2,705			50	43,805				
Hongkong	18	7,187	98	63,716	48	40,584	11	17,430	11	29,189	21	14,352	20	104,103	7	48,059
Kwantung																
Palestine and Syria	2	1,794	4	2,268	14	11,715	2	2,399	1	2,250	9	8,658	17	23,456		
Persia			4	1,900	8	6,987					53	25,435				
Philippine Islands	1	300	63	36,605	94	81,962	15	22,593	4	11,063	75	39,214	17	44,201	1	3,663
Siam			3	1,987	7	5,573					20	9,180				
Turkey													2	1,030		
Other Asia																
Australia	1,248	459,774	821	422,732	436	368,413	254	280,701	66	128,480	458	251,973	195	253,315	4	8,874
New Zealand	108	40,791	112	64,689	345	295,625	87	103,507	33	79,621	180	89,500	45	58,858		
British Oceania																
French Oceania	1	250	1	650												
Other Oceania																
Belgian Congo			1	420	3	2,640					30	12,900				
British West Africa	4	1,693	2	1,319	20	17,611	24	31,122	1	3,001	129	101,110	134	153,993	1	2,658
British South Africa	98	40,231	86	57,185	538	453,382	359	414,545	15	29,743	139	79,927	142	191,292	4	16,501
British East Africa			4	2,652	22	21,512	11	12,551	1	1,976	31	26,750	4	5,428		
Canary Islands			1	663	6	5,448			1	2,724	4	3,008	2	2,471	10	18,856
Egypt			51	21,731	84	75,511	31	38,257	4	9,845	97	49,132	4	4,041		
Algeria and Tunis																
Other French Africa			1	587	2	1,645							22	15,217		
Liberia					2	2,181	1	1,655			3	1,698				
Madagascar			2	1,160	3	2,307	6	7,422								
Morocco			1	865	26	25,917	6	8,945			33	16,260	3	4,405		
Portuguese East Africa			3	1,912	15	11,811					12	10,525	6	7,447		

for December, 1927

Canadian Exports

ELECTRIC VEHICLES	PARTS	TIRES						PASSENGER CARS						TRUCKS		PARTS	COUNTRIES		
		Casings		Inners		Solids		Up to \$500		\$500 to \$1,000		Over \$1,000		No.	Value				
		No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value						
		\$15,713	3,896	\$48,457	9,149	\$15,167											Austria		
		1,609	66	919	68	128											Azores and Madeira Is.		
		116,153	2,115	23,615	652	1,482	16	\$575		46	\$38,321	1	\$1,696		\$3,276		Belgium		
		246	510	6,486	510	738											Bulgaria		
		5,281	3,405	38,150	3,660	9,672	105	3,595	9	\$4,217	19	10,873					Czechoslovakia		
		127,175	15,991	145,075	11,969	17,519											Denmark and Faroe Is.		
		225	8	80	2	3											Estonia		
		42,338	2,553	43,958	1,150	3,667											Finland		
		159,599	358	5,535	257	688											France		
	1	3,012	857,700	12,692	182,888	0,536	15,017										Germany		
		618	2	24	2	3											Gibraltar		
		10,983	2,312	32,587	2,349	4,411	47	2,802									Greece		
		5,432	212	3,375	150	277											Hungary		
		2,030	60	710	28	44											Iceland		
		44,810	7,479	86,675	6,401	13,297	170	3,412									Italy		
		3,569															Latvia		
		230	0	41													Lithuania		
		983															Malta, Gozo and Cyprus Is.		
		114,345	2,135	40,397	1,785	5,451	1	27	10	4,950	8	5,007					Netherlands		
		12,284	264	7,321	149	494	11	241									Norway		
		6,829	2,429	31,209	1,129	2,757											Poland and Dantzig		
		18,226	300	3,220	120	175											Portugal		
		11,470	2,163	24,340	1,079	1,733											Rumania		
		13,029	6	145	12	46											Russia		
		53,915	6,312	88,626	6,227	13,195	85	3,668									Spain		
		231,405	8,335	96,976	7,357	13,777	4	300	24	11,473	29	22,090	2	2,908			Sweden		
		9,932	3,065	39,519	1,874	4,765	16	846									Switzerland		
		5,197	133	1,414	154	547											Turkey		
		406,778	5,671	66,724	2,126	5,212	93	1,554									United Kingdom		
		8,102	325	3,746	250	326											Irish Free State		
		683															Yugoslavia		
	1	2,104	712	5	31	6	4	182	11	3,337	4	3,650	1	1,300	1	100	2,006	United States	
		1,881,498	1,139	11,566	2,488	6,423	58	3,092										British Honduras	
		5,911	892	11,594	405	948	2	141	12	5,439								Canada	
		14,287	533	10,692	470	1,217			2	958								Costa Rica	
		1,119	89	2,148	26	103	66	3,900										Guatemala	
		2,726	175	2,343	155	351	40	2,017										Honduras	
		26,669	723	10,532	899	1,774	47	1,857										Nicaragua	
		7,246	440	6,812	460	2,351	24	1,297										Panama	
	1	2,269	96,958	11,070	115,323	5,893	9,789	193	7,005									Salvador	
		29	14	137	26	37	4	79										Mexico	
		2,567																Mission	
		2,044	17	197	11	22	8	343										Newfoundland	
		22,028	170	2,219	172	293	13	436	5	2,026	21	18,200						Barbados	
		3,661	45	1,333	28	88			1	402	6	3,664						Jamaica	
		6,279	100	797	57	148	8	150	3	1,459	2	1,405						Trinidad and Tobago	
		122,171	10,664	94,833	10,160	11,508	542	20,709										Other British West Indies	
		17,275	1,067	14,344	592	1,438	149	5,573										Cuba	
		3,075	347	6,899	431	1,173	12	204										Dominican Republic	
		1,403	240	2,992	137	326	18	538										Dutch West Indies	
		5,942	353	6,273	555	1,723	8	221										French West Indies	
		794	12	88	3	6	2	20										Haiti	
		330,215	26,467	276,469	12,603	24,006	498	13,808	64	28,672	19	13,155	99	121,764	2	5,880	18	Virgin Islands	
		6,857	75	1,032	36	104												Argentina	
		210,970	11,949	174,938	1,683	5,994	107	3,871	2	978	2	1,706	1	1,101	8	3,131		Bolivia	
		49,576	2,512	32,679	1,185	2,276	33	2,932	4	1,574	4	3,224						Brazil	
		51,340	3,004	40,448	1,677	4,534	62	1,898										Chile	
		2,626	229	4,242	218	547												Colombia	
		1,103																Ecuador	
		216																British Guiana	
		384																French Guiana	
		3,295	240	3,743	145	275												Dutch Guiana	
		46,093	1,303	21,135	928	2,523	18	786										Paraguay	
		43,094	6,374	75,658	3,135	4,661	19	929	10	4,790	2	1,585	3	1,137	10	3,872		Peru	
		37,414	928	19,157	545	2,030	3	404										Uruguay	
		500	182	2,074	100	157												Venezuela	
		133,335	4,792	65,330	1,502	3,131	139	4,601	88	30,048	70	62,722	28	34,258	38	14,735	23,782	Aden	
		13,360	1,026	18,196	393	1,091	58	2,137	9	3,693	13	8,311	3	3,357	6	2,355		British India	
		75,530	3,828	35,364	1,016	1,842	192	4,646	56	26,328	9	5,156						Ceylon	
		26,218	1,338	15,650	1,433	2,366	32	730	4	1,916								Straits Settlements	
		56,978	5,286	49,613	2,034	3,850	121	3,304										China	
		19,324	220	2,671	104	245			26	12,254	7	4,449	26	33,202				Java and Madura	
		772																Other Dutch East Indies	
		1,226	41	1,050			68	2,652										French Indo-China	
		5,897																Hejaz, Arabia and Iraq	
		536,105	4,591	48,702	4,275	10,628	291	7,804										Hongkong	
		1,155																Japan	
		16,888	982	10,147	650	1,186												Kwantung	
		19,124	651	12,835	474	2,640												Palestine and Syria	
		57,136	3,545	43,416	2,606	5,142	42	1,046										Peria	
		4,213																Philippine Islands	
		4,583	457	4,503	415	784												Siam	
																		Turkey	
																		Other Asia	
	1	1,512	351,547	4,151	49,453	1,992	3,454	182	6,945	232	88,480	16	8,400	1	1,406	36	18,792	78,631	Australia
			126,250	21,805	500	1,276	121	5,054	30	13,981	134	79,535	16	21,296				New Zealand	
			1,909		12	20	2	70										British Oceania	
			911	17	215	6												French Oceania	
																		Other Oceania	
																		Belgian Congo	
																		British West Africa	
																		British South Africa	
																		British East Africa	
																		Canary Islands	
																		Egypt	
																		Algeria and Tunis	
																		Other French Africa	
																		Liberia	
																		Madagascar	
																		Moreco	
																		Portuguese East Africa	
																		Other Portuguese Africa	
																		Spanish Africa	
4		\$8,987	\$7,164,596	203,479	\$2,471,849	133,518	\$269,860	4,022	\$140,366	646	\$275,952	723	\$531,851	488	\$605,427	336	\$142,406		

AUTOMOTIVE **NEWS SECTION** INDUSTRIES

Philadelphia, Pennsylvania

March 3, 1928

Production Pace Increases as Retail Sales Improve

PHILADELPHIA, March 3—Generally improved production schedules effective in practically all automobile plants during February will be further increased in March with the opening of spring buying. Some stocks of new cars have been accumulated in preparation for spring trade but these are generally lower than in recent years and the development of normal buying will require continued large production to meet deliveries.

Though increased deliveries of Ford cars will be made in March these will have little effect on the general market. All of the Ford deliveries must be made on back orders for at least several months leaving all of the spontaneous market to other makers. Buyers coming into the market during the first half of the year will be compelled to turn to other makes if they desire immediate use.

February sales reported from leading centers show gains over the same month last year, this despite the fact that a considerable part of the February, 1927, sales were Fords. Nearly all parts of the country except the Northwest and Pacific Coast States have been buying in good early year volume and notable improvement is shown in some districts which recently have been stagnant.

Used car buying has been much improved during February, clearing the way to more active movement of new
(Continued on page 392)

Physicists Skeptical of "Fuelless Motor"

WASHINGTON, Feb. 29—Physicists at the Bureau of Standards are puzzled and extremely skeptical over the "fuelless motor" alleged to have been invented by Lester J. Hendershot of West Elizabeth, Pa. The explanations already given by Mr. Hendershot, the bureau says, are full of contradictions. They are unwilling to pass judgment until they see the motor, but they are confident that no device is possible which will draw from the magnetic field of the earth enough power to operate a motor without auxiliary equipment of such weight and so expensive as to make it impractical.

Mr. Hendershot's explanation that his motor was run by the same power which turns a compass needle, is disputed by Dr. Paul D. Heyl, who has worked on the earth induction compass. He declares that it is inconceivable that more than one-thirtieth of a horsepower at the utmost, could be obtained in such a way. So far as it has been explained to date, Dr. Heyl said, "The 'fuelless motor' seems to be a revival of the old perpetual-motion idea."

M. & A.M.A. Groups Show Export Gains

NEW YORK, Feb. 29—Foreign trade in automobile parts, accessories and shop equipment forged rapidly ahead last year, according to a survey just completed by the Motor and Accessory Manufacturers Association. Shop equipment manufacturers recorded 54 per cent gain in foreign trade, with replacement parts running a close second. Foreign shipments of accessories in 1927 showed the slightest gain of any.

The ratio between foreign and domestic sales has also shown an increase, 120 companies who recorded figures showing a foreign sales volume of slightly more than 7 per cent for an average, and some of them running as high as from 10 to 15 per cent.

Conclusions drawn from the survey vary somewhat from the Department of Commerce figures for the entire industry on the valuation of last year's foreign shipments for the three divisions named. These figures show that exports of replacement parts last year amounted to \$50,274,867, a 40 per cent increase over 1926; accessories, \$7,872,892, a decrease of 8.4 per cent, and shop equipment, \$6,919,944, a gain of only 1 per cent.

Krohn Leaves Paige

DETROIT, Feb. 29—Henry Krohn has resigned as general sales manager of the Graham-Paige Motors Corp. Mr. Krohn has no definite plans to announce for the present. Mr. Krohn was for 18 years associated with Paige, joining the company when first organized. His long service as sales manager with one company is believed to be without parallel in the automotive industry.

Briggs Earns \$1,155,729

DETROIT, Feb. 29—For the year ended Dec. 31, Briggs Mfg. Co. reports a net profit of \$1,155,729, equal to 57 cents a share on 2,003,225 shares of no par capital stock. This compares with net profit of \$8,178,512 in 1926.

Ford Output Grows as Plants Reopen

DETROIT, Feb. 27—According to Ford Motor Co. officials, production is now running at nearly 1200 daily, distributed over eight plants. In addition to the River Rouge plant, new cars are being assembled in the following plants in the United States: Kearny since Dec. 12; San Francisco, Jan. 4; Louisville, Jan. 10; Kansas City, Jan. 23; Chicago, Feb. 6 and Norfolk, Feb. 21. The Seattle and Chester, Pa., plants also began operations this morning. Dallas, Minneapolis, and Boston plants will resume next week.

Chevrolet to Establish Distribution Terminal

CLEVELAND, Feb. 28—Establishment of a large Chevrolet distribution terminal in Cleveland is planned for the near future, it became known today. Negotiations for a site on the West Side, are nearing completion. A two-story building with facilities to serve the entire Cleveland zone, extending west to Toledo, east to the Pennsylvania line and south to Mansfield, is planned. The building will include a warehouse for parts and office quarters for the district personnel.

Northrup Joins Willys

TOLEDO, March 1—Amos E. Northrup has been appointed art director and chief designer for Willys-Overland, Inc., with supervision of all body styles, color combinations, upholstery, decorative work and appointments. He was previously chief designer of the Murray Corp. of America and up to 1923 devoted most of his efforts to designing custom cars.

O'Mara With Brockway

NEW YORK, Feb. 29—Martin A. O'Mara, has resigned as vice-president in charge of Eastern sales for the White Co., and has been elected president of the Indiana Truck Division of the recently enlarged Brockway Motor Truck Corp. He later will be elected an officer and director of the Brockway company.

AC Promotes Holmes

FLINT, March 1—A. S. Holmes has been named sales manager of district No. 2 with headquarters in Flint, of the AC Spark Plug Co. He was formerly in charge of sales in the Atlanta district.

Durant 1927 Report Sets \$3,618,648 Loss

Flint Writeoff Nullifies Operating Profit—\$3,444,473
Loss in 1926

NEW YORK, March 1—Durant Motors, Inc., and subsidiary companies for the eight months ended Aug. 31, 1927, shows net loss of \$3,618,648 after depreciation and other deductions. For the year ended Dec. 31, 1926, net loss was \$3,444,473 after similar charges. In a statement by W. C. Durant, president, he declares that the interest in Flint Motor Co., consisting of a stock investment of more than \$3,000,000 and advances of \$3,666,897, has been written off 100 per cent.

The year 1925 showed a net operating loss of \$1,945,862 which in 1926 was reduced to \$675,081, and the eight months of 1927, showed a net operating profit of \$403,427, Mr. Durant said. Had it not been for the deduction of \$3,666,897 representing the writeoff of advances of Flint Motor Co., the net loss of the 1927 period would have been converted into a net profit of \$48,000, he declared.

Assets listed in the consolidated balance sheet as of Aug. 31, 1927, were land, buildings, equipment less depreciation, \$22,097,249; cash, \$3,626,324; bill of lading drafts, \$177,889; receivables, \$2,541,088; inventories, \$7,928,881; marketable securities, \$230,720; investment in affiliated companies, \$2,550,656; other real estate, \$1,594,999; miscellaneous receivables, \$494,150; cash on deposit with trustees, \$288,584; deferred charges, \$704,269; total, \$42,360,395.

Liabilities are capital stock (represented by 1,852,413 no par shares), \$36,665,149; par value of 6 per cent cumulative preferred stock of subsidiaries and interest of common stock of subsidiaries in hands of public, \$2,658,547; real estate mortgages, \$224,700; mortgage bonds—subsidiary companies \$5,950,700; notes payable, \$709,250; accounts payable, \$4,551,368; dealers' and customers' deposits, \$75,924; accrued taxes, rents, etc., \$749,599; Federal taxes for 1927, \$33,001; reserve for contingencies, \$546,218; profit and loss deficit, \$9,813,061; total, 42,360,395.

Current Assets \$14,630,488

Speaking of the company's current position, Mr. Durant said:

"The balance sheet shows current assets of \$14,630,488 against current liabilities of \$6,119,142. Of the \$14,630,488 of quick assets, over \$3,800,000 is represented by cash in banks or by drafts. The inventories are only \$7,928,881, showing that the management has been successful in its efforts to increase the turnover of working capital as fast as possible. The balance of the net quick assets consists of notes

and accounts receivable, estimated to be good—due allowance having been made for doubtful items—and marketable securities carried upon the books at a cost of more than \$110,000 below the market value of these securities at the date of audit.

"Relative to the current liabilities, there are no bank loans, and the notes payable in the amount of \$709,250, have been almost entirely liquidated since the date of the audit. Of the \$4,500,000 accounts payable almost \$2,000,000 is owed to affiliated companies.

"Reverting again to the assets, there appears, among other assets, an item of \$2,550,656 representing stock investments in such affiliated companies in which less than a majority interest is owned. Of this amount, all except \$10,000 is invested in companies which have enjoyed an operating profit for the last three years.

New Packard Eights Priced \$3,550-\$3,850

DETROIT, March 1—A lower priced line of body models on the eight-cylinder chassis is being offered by Packard Motor Car Co. The line called the new Standard Eight, ranges in price from \$3,550 to \$3,850 and is offered in addition to the former eight-cylinder line with its custom bodies. Advance information of the addition of these lines was given to distributors about March 1, and resulting orders necessitated doubling the originally intended production scale. Packard is also expanding its plant through the addition of two new buildings and the purchase of additional machinery. Prices are as follows:

7-pass. touring	\$3,550
2-pass. coupe	3,550
5-pass. phaeton	3,650
4-pass. conv. coupe	3,650
4-pass. coupe	3,750
5-pass. club sedan	3,750
7-pass. sedan	3,750
7-pass. sedan limousine	3,850

Paige Writes Off \$2,662,408

DETROIT, Feb. 29—The Paige-Detroit Motor Car Co. reports a net loss of \$4,643,351 for 1927, of which \$2,662,408 was for write-off of old material and equipment due to model changes. The name of the company was changed on Jan. 1 to Graham-Paige Motors Corp.

Chandler Loss \$473,109

NEW YORK, Feb. 29—Chandler-Cleveland Motors Corp. reports net earnings for 1927 before reserves of \$26,890, with net loss after all reserves of \$473,109. This compares with net profit of \$401,329 in 1926.

Reynolds Reports Loss

DETROIT, Feb. 29—The Reynolds Spring Co. reports a net loss of \$162,369 for 1927, compared with a net loss of \$164,038 in 1926.

Business in Brief

Written exclusively for AUTOMOTIVE INDUSTRIES by the Guaranty Trust Co.

NEW YORK, March 1—Sentiment in the financial community during the past week was influenced by contrasting developments in the business situation—larger unemployment in industrial centers and improved money conditions. It is reported that the number of workers unemployed at the present time has not been exceeded since 1922. On the other hand last week's reduction of \$91,000,000 in brokers' loans was distinctly encouraging. Total borrowings now stand at the low point for the year.

FEDERAL RESERVE REPORT

Changes in the position of the Federal Reserve Bank items last week were of little significance, although total gold holdings were the largest since May, last year. Pending March treasury operations and a clearer money outlook, market sales of bonds were unusually small and average prices touched the lowest levels this year. Stock prices, however, have improved.

FREIGHT CAR LOADINGS

Car loadings of railroad revenue freight for the week ended Feb. 11 numbered 906,009, which was a decrease of 20,195 cars from the previous week and of 56,593 cars from the number loaded in the like period a year ago. Total loadings for the year to date amount to 5,300,131 cars, as against 5,684,926 cars a year ago and 5,518,812 cars two years ago. Although grain and live stock loadings are greater than last year, the decrease in the volume of coal hauled this year accounts for the lower total.

PETROLEUM OUTPUT

During the week ended Feb. 18, production of crude petroleum advanced slightly, average daily output for that period being 2,363,300 bbl. in comparison to 2,358,500 bbl. in the week previous and 2,472,000 in the week ended Feb. 19 a year ago. World production of copper during January amounted to approximately 143,500 short tons, as compared with about 152,000 tons in December and 146,700 tons in January last year.

FISHER'S INDEX

Commodity prices, as indicated by Professor Fisher's index of wholesale commodities, declined fractionally last week to 96.6 per cent of the 1926 average, in comparison to 96.8 per cent a week earlier and 95.6 a month ago.

BANK DEBITS

Bank debits to individual accounts, which indicate the volume of trade transacted by check payments in 141 centers, as reported to the Federal Reserve Board for the week ended Feb. 22, were 1.1 per cent larger than in the previous week and 13.9 per cent greater than in the corresponding period last year.

Cooperation Urged to Promote Batteries

Need to Meet Outside Competition Told by Parker at Convention

CHICAGO, Feb. 27—Optimism was the keynote of the annual convention of the National Battery Manufacturers Association which met in Chicago, Feb. 23 and 24. More than 15,000,000 batteries were sold in the year just ended and, according to the report of Commissioner W. J. Parker, many members have reported improved conditions for the first six weeks of 1928. Some of these manufacturers show an increase of 100 per cent over the same period of 1927.

Ambitious plans for future activities of the association were outlined at the various sessions of the convention. It was decided to send representatives to the aid of the Bureau of Standards in Washington which is compiling standard battery specifications. The association also decided to publish a data book as an association, rather than as individuals.

One of the most interesting of the papers presented during the convention was by Alvin E. Dodd, manager of the domestic distribution department, United States Chamber of Commerce, in which he showed that industry is overcoming the heavy overproduction of recent years by more intelligent sales effort. Mr. Dodd cited the interchange of information practiced by associations as the best remedy for business ills which may beset the industry now or in the future.

Commissioner Parker presented a report on a projected plan for co-operative advertising among members, as a step in the program of meeting the "new competition." He said:

Not Enough Educational Copy

"The trouble is that most of us are not willing to devote 75 per cent of our advertising to general educational copy. We want it to be as nearly 100 per cent our own as possible. Right there we fall short because while we are busy competing with each other, who is educating the public to think about our product? We get into a sort of whirlpool of inside competition. No one is worrying about stabilizing the market or expanding it and we circle around each other trying to discover a way to build batteries cheaply instead of educating the public to the fact that no one can buy a good battery or a good anything else for nothing."

A report of the progress made by various members in their fight for the refund of the automobile accessories tax was made by Kirk D. Holland, tax specialist who represents a number of the members. Standardization in sales policies was urged by J. B. Perlman of the Hartford Battery Mfg. Co.

Chevrolet Instructs on Shop Management

DETROIT, Feb. 27—Service managers of all the Chevrolet dealers in the country are taking factory courses in every phase of shop management from resident instructors stationed in each zone. The schools will be attended by approximately 4000 service managers. Principal subjects covered in the schools are shop arrangement, equipment and special tools, appearance and maintenance, shop personnel, training of service personnel, operating costs, specializing the work of mechanics, compensation of mechanics and the keeping of detailed and exact shop records.

Two Railroads Urge Flynn Report Action

WASHINGTON, Feb. 28—Adoption of the Flynn motor bus and truck report by the Interstate Commerce Commission was urged this week in a brief filed with the commission by the Pennsylvania Railroad, the Reading Railroad, and their subsidiaries. The competition of motor buses with these two lines between Philadelphia and New Jersey points, and between New Jersey points and New York, has created a serious condition for the railroads, the brief points out.

Urging that Federal regulation is immediately necessary providing for regulation of interstate buses, the railroads ask that the report be adopted and that the I. C. C. be authorized to determine the preliminary question of public necessity for operation of interstate buses. The report of the commission is not looked for during the present session of Congress, although briefs and arguments on same were heard early this month.

Chrysler Offers Fabric Body

DETROIT, Feb. 27—Chrysler Corp. is now offering for special orders a custom fabric body limousine on its 72 chassis priced at \$1,745. The car has a disappearing glass partition and two theater seats raise the passenger capacity to seven. The car is finished in black with belt molding in black polished striping lacquer which has red striping above and below.

Stewart Sales Gain 62%

BUFFALO, Feb. 27—The sale of Stewart trucks increased 45.7 per cent in 1927 over the previous year. Incoming orders at the Stewart factory for January, 1928, were 62 per cent greater than for the same month last year.

Truck Merger Joins Brockway-Indiana

G. A. Brockway to Head Consolidation Which Retains Brockway Name

NEW YORK, Feb. 25—Brockway Motor Truck Corp., Courtland, N. Y., and the Indiana Truck Co., Marion, Ind., will be merged into a single company retaining the Brockway name, it has been announced by George A. Brockway, president of the former company. Combined assets of the two companies exceeded \$9,000,000 and total sales are in excess of \$15,000,000. Mr. Brockway will be president of the new company.

Authorized preferred stock of the Brockway corporation will be increased from \$1,550,000 to \$3,000,000, convertible into common stock on the basis of one preferred for two common stock shares. Common stock will be increased from \$150,000 to \$500,000 no par shares.

According to the announcement both lines of trucks will continue in production, but economies in buying, production and distribution will be effected by the merger. All of the 38 direct factory branches of the two companies will be maintained and business will be extended in both foreign and domestic fields.

White Adds Gas-Electric With 6-Cylinder Engine

CLEVELAND, Feb. 27—The White Co. is now building a gas-electric bus, the electrical equipment of which was developed in conjunction with the General Electric Co. The White six-cylinder 100 hp. engine has been modified and fitted for gas-electric service and the large powerplant has made possible the use of larger and more powerful electrical equipment.

The generator is driven by a flexible steel shaft which runs clear through the generator to commutator end, the drive being taken through rubber ball joints. The two motors are connected to the underslung worm drive rear axle by short universal joint shafts and the propeller shaft brakes are mounted directly on the rear end of the motors, forming a part of the motor design. Wheelbase is 227 in., overall width 95 in., overall length 358 in. and chassis weight 11,500 lb.

Dunlop Develops Process

BUFFALO, Feb. 27—Engineers of the Dunlop Tire & Rubber Co. have perfected a new process for cleaning raw rubber in which a screening machine is used instead of washing by water. In addition to cleaning the raw material, the new process is claimed to make the rubber stronger by removing all traces of grain. Holes in the screens are 35/1000 of an inch in diameter—400 to a square inch.

Steel Mills Continue Capacity Operation

Heavy First Quarter Commitments Defer Application of New Prices

NEW YORK, March 1—Paired with heavy shipments of sheets and strip-steel to automotive consumers is a continuance of virtually capacity operations at finishing mills. As no representative business at the new prices has been placed so far, it is suspected that buyers were afforded every opportunity to contract for much heavier tonnages at old prices than would be called for by their normal first quarter requirements. Possibly mills expect specifications against old price contracts to be furnished before the end of the current quarter, but even so this would take care of the needs of many consumers until the end of April.

In hot-rolled steel bars, however, an advance of \$1 per ton, recently announced by the leading interest as applying to second quarter business, has been followed by the independents, and bids fair to become generally effective. Bars, shapes, and plates travel together in the steel market's ups and downs, and the \$1 advance appears to have been influenced more by better demand in the structural steel market than the automotive situation.

While so far no changes have occurred in the price for cold-finished steel bars, the undertone of the market for that automotive specialty has been strengthened as the result of the advance in the price for the hot-rolled material. Automotive alloy steels are unchanged in price, with the market firm and mills enjoying a fair volume of business from the higher-price motor car manufacturers. Good automotive demand for bolts and nuts is in evidence.

It is generally thought that the movement of steel into consumption during the present quarter is running between a quarter and a third heavier than it did during the final quarter of 1927. Expectations are that during the second quarter of 1928 average billing prices will show some improvement over the first quarter, but that tonnage will fall below that of the first quarter.

Pig Iron—Automotive foundries continue to figure quite prominently as buyers of second quarter iron. Prices for foundry and malleable iron, both in the Middle West and Valley are unchanged, but the market is firmer and more uniform.

Aluminum—Slightly better interest is shown by automotive consumers in both virgin and secondary metal. Business is done at previously named prices, and, on the whole, satisfactory routine conditions prevail.

Copper—Some moderate demand for second half March shipments is coming out. Producers' support of the market continues its chief prop. Brass mills are fairly active, but complain of a lack of advance bookings.

Tin—Late London mail advices ascribe

the sharp downtrend of tin values early in February to "bold bear manipulation" of the market. In spite of prices ruling 25 to 30 per cent below those of a year ago, consumers continue hand-to-mouth buying.

Lead—Storage battery manufacturers have not increased their lead purchases as the result of the very attractive prices which prevail.

Zinc—Slightly better demand is in evidence, but producers consider prices far from satisfactory.

Orlando J. Root Dies, Made R & V Knight

MOLINE, Feb. 25—Orlando J. Root, one of the pioneers in American automotive industrial circles, associated with the Root & VanderVoort company, makers of the R & V Knight and during the war munitions contractors, died Feb. 16 in his home as the result of a self-inflicted bullet wound. He was 58 years old.

Mr. Root was born Sept. 14, 1869, in West Bay City, Mich., and entered the Michigan State Agricultural College at Lansing, being a member of the first class in mechanical engineering to be graduated. While in college he met William G. VanderVoort with whom at the conclusion of his college course, he established the Root & VanderVoort company in Champaign, Ill., manufacturing gas engines. In 1899 the plant moved to East Moline and the firm began manufacture of automobiles. Liquidation after the war forced the firm to quit active business after an unsuccessful attempt to resume its position in the automobile field. In the last two years Mr. Root had given much attention to the Standard Calorimeter Co. activities.

Mrs. C. S. Mott Dies

DETROIT, March 1—Many dignitaries of the automobile world were in Flint, today, for the funeral of Mrs. Mittie Butterfield Rathburn Mott, wife of Charles S. Mott, vice-president of General Motors Corp., who died in Tucson, Ariz., Sunday night after a few weeks' illness. Mr. and Mrs. Mott were married last July.

Traffic Light Controlled by Car's Horn Impresses Baltimore Police in Test

BALTIMORE, Feb. 29—A new traffic light which operates at the sound of an automobile horn has been tested by police officials of Baltimore and they have been much impressed by its operation. It is the invention of Charles Adler, Jr., a Baltimore signal engineer.

One of the signals was installed at Falls Road, which is a much traveled artery, and Belvedere Avenue. The light gives the vehicle on the Falls Road the right-of-way until a car approaches on Belvedere Avenue. Two metal boxes about 12 by 18 in. are attached to telephone poles on Belvedere Avenue. These are known as ears.

January Employment Under January, 1927

Increase Shown Over December of 1.1%—Automotive Industry Leads Gains

WASHINGTON, Feb. 28—An increase of 1.1 per cent in employment and 3.9 per cent in payrolls, during January, as compared with December, is reported by the Bureau of Labor Statistics of the Department of Labor. Comparing January of this year with last, the figures show a decrease of 5.5 per cent in both employment and payrolls for the current month. The data for January, 1928, is based on returns from 10,772 establishments in 54 of the chief manufacturing industries, employing 2,907,700 workers, whose combined earnings averaged \$75,000,000 per week.

Of the 54 industries, 10 reported an increase in payroll totals and employment during January, and of this 10 the automobile industry shows the largest increase. The figures show that during January the industry increased its number of employees 8.6 per cent, compared with December. The automobile tire industry showed an increase in January of 5.4 per cent. Comparing January with January of a year ago, the automobile industry showed the most pronounced increase, being 9.4 per cent in employment and 35.2 per cent in payroll totals—followed by rubber, agricultural implements, and automobiles tires, which showed substantial, though smaller, increases.

K. C. Show Brings \$5,000,000 Sales

KANSAS CITY, Feb. 27—Orders and contracts taken at the Kansas City show approximate \$5,000,000, according to George A. Bond, secretary of the Kansas City Motor Car Dealers Association. Large sales of equipment and accessories were reported. The attendance was 231,749, the largest the city has ever recorded.

White lines have been placed 10 ft. from these ears.

If a motorist is on Belvedere Avenue and wants to cross Falls Road he ordinarily has the red light against him. A sign instructs him to stop at the white line and blow his horn. When he does this the sound is transmitted by a delicate instrument via the ears to the light. The light then turns green on Belvedere Avenue and red on Falls Road for 18 seconds.

Delicate tuning of the mechanism prevents it from picking up the sound of the horn unless the vehicle has reached the white line.

Men of the Industry and What They Are Doing

Hennecke Forms Company to Develop Merchandising

E. V. Hennecke has organized Earle V. Hennecke, Inc., New York City, to furnish sales and advertising counsel to manufacturers of automotive, electrical and radio products and to act as a sales organization handling the complete distribution throughout the world for several large manufacturers. The company, in addition, will manufacture and market several new products in the near future.

Under Mr. Hennecke's plans, a complete organization will be placed in the field immediately, consisting of six district managers. An export manager and a capable executive force will be located at the main office.

Mr. Hennecke, until recently, was vice-president and general manager of the Moto Meter Co., Inc., Long Island City. He is a past president and a past chairman of the board of the Automotive Equipment Association.

Close Named Vice-President

B. G. Close has been named vice-president and merchandising manager of the King Quality Products Co., of Indianapolis, Ind. Mr. Close has been vice-president of the company in Buffalo for some time and is well known throughout the automotive industry. The entire automotive business of King Quality Products Co., of Buffalo, was recently purchased by McQuay-Norris Mfg. Co.

Alford Out of Politics

W. H. Alford, vice-president of Nash Motors Co., has resigned as president of the Kenosha city council. He stated that his health and private business affairs necessitated his retirement from civic affairs. Mr. Alford has been president of the council since the inception of the city manager form of government here.

Duffy Joins Bantam

Arthur Duffy has been appointed assistant to the president of Bantam Ball Bearing Co. He will have complete charge of the engineering construction of the new factory being built at South Bend.

Nichols With Peter Smith

Earl R. Nichols, formerly with the Service Steel Co., Detroit, has joined the organization of the Peter Smith Heater & Mfg. Co. Mr. Nichols will devote his efforts toward developing pressed steel business.

Gabriel Adds Directors

P. T. White and J. Shoemaker have been elected directors of Gabriel Snubber Mfg. Co. to fill vacancies.

Welch to Meet Aides at Panama Conference

H. S. Welch, manager of export sales for the Studebaker Corp. of America, is en route to Panama City, Panama, where he will hold a sales conference of Studebaker field representatives for Central and South America. Studebaker field representatives who will meet with Mr. Welch are H. A. White, Mexico City, Mexico; William Althoff, Havana, Cuba; Theodore M. Van der Stempel, Panama City; L. Lorenzen, Valparaiso, Chile, and Bernard Keen, Barranquilla, Colombia.

Westinghouse Makes Appointments

A. E. Kaiser has been appointed director of production for all works of the Westinghouse Electric & Mfg Co., and S. C. Hoey has been made manager of the Homewood renewal parts works. E. C. Brandt and F. J. Shiring have been appointed assistant managers of the East Pittsburgh works, and J. E. Webster has been made chief plant engineer.

Dunlevy Heads Szkely Sales

Lorimer Dunlevy has resigned as sales manager of the Climax Engineering Co., Clinton, Iowa, effective March 15, to become general sales manager for the O. E. Szkely Co., of Holland, Mich., maker of commercial airplane engines and other products now in process of design.

Gotfredson Promotes Mitchell

Frank Mitchell, former mayor of Windsor, Ont., and identified with the automotive industry in Canada for many years, has been appointed general sales manager of the Gotfredson Truck Corp. of Windsor. Mr. Mitchell has been with Gotfredson for seven years.

Join Black & Decker

R. C. Bastress, L. W. Beuhausen and G. N. McCarthy have joined the sales organization of Black & Decker Mfg. Co. Mr. McCarthy takes the place in the Buffalo territory made vacant by the transferral of H. B. Austin to the Chicago district.

Guion Opens Service

A. D. Guion, advertising manager of the Bridgeport Brass Co., resigned March 1 to open an advertising service of his own in Bridgeport, Conn.

Kilbourn Leaves Willys to Join Thompson Agency

Orrin P. Kilbourn, assistant general sales manager for Willys-Overland, Inc., for the past five years, has resigned to become associated with the automotive unit of the J. Walter Thompson Co., New York.

Previous to becoming a general sales executive with the Willys-Overland domestic organization, Mr. Kilbourn was connected with the export division and has contacted nearly every country in the world where motor cars are used.

With the J. Walter Thompson organization he will be identified with the export campaign of General Motors. In his new connection he will make his headquarters in New York.

Williams Heads Association

S. M. Williams, vice-president and branch manager for the Autocar Company in Chicago, has resigned and is retiring from the truck field to take charge of the National Association of General Contractors at Washington, D. C., as general manager. Mr. Williams was instrumental in organizing the Motor Truck Association of Illinois and was its first president.

Handley Joins Dodge

J. I. Handley, former head of the Handley Knight Motors Co., who has been Chrysler distributor in Cincinnati for the past two years, has sold his interests there and has joined the sales department of Dodge Brothers, Inc.

Duggan Addresses Boosters

Tom O. Duggan, merchandising director of the National Standard Parts Association, addressed the monthly meeting of the Detroit Automotive Boosters Club in the Hotel Savoy March 2.

Zimmerman Goes Abroad

Paul Zimmerman, export manager of Peerless Motor Car Co., has returned to Europe on his second export trip within six months to arrange for largely increased distribution of Peerless cars during the present year.

Merrell Named Vice-President

John H. Merrell has been elected a vice-president of the Manhattan Rubber Mfg. Co., Passaic, N. J. Mr. Merrell was formerly general manager of the Chicago branch. A. S. Hardy of the export department has been elected a director.

DuBois With Craveroller

H. H. DuBois has been appointed sales manager of the Craveroller Co. of America to direct an extensive sales expansion program. Mr. DuBois was with John Warren Watson Co.

Lockhart Recovering, to Again Make Try

Stutz Blackhawk Establishes Stock Car Mark of 106.52 m.p.h.

INDIANAPOLIS, Feb. 27—Stutz Motor Car Co. of America, Inc., has announced that Frank Lockhart is recovering rapidly from the minor injuries suffered in the accident while attempting to establish a new world's speed record at Daytona Beach and has applied for sanction by the American Automobile Association for another attempt within a short time. The car has been shipped to the Stutz factories here for reconditioning.

Two Stutz Blackhawk speedsters exceeded the American stock car speed record for one mile at Daytona Beach, Feb. 23, when Gil Anderson drove a mile at 106.52 m.p.h., and Tom Rooney drove at 105.54. This new mark was set on the last day of the speed carnival, exceeding the mark of 104.34 set by Wade Morton in an Auburn last week.

Oakland Schedules 27,773, Adds 2 District Offices

PONTIAC, March 1—Oakland Motor Car Co. has announced a March production schedule of 27,773 units, which exceeds by more than 10,000 the output in March, 1927. First quarter production will exceed by 112 per cent the 34,727 production in the first quarter last year.

The new \$3,000,000 assembly building for the Oakland car will be placed in operation in April, permitting further increases.

Additional district offices have been opened in Milwaukee and Washington, D. C., dating from today, bringing the total to 24 district offices. W. R. Tracy, vice-president in charge of sales, has announced.

Philadelphia Sales Gain

PHILADELPHIA, Feb. 27—Retail sales of new cars in January increased 214.8 per cent over December and 31.6 per cent over January last year, according to the Philadelphia Federal Reserve Bank review. Used car sales, likewise, showed important increases over the former month and the same month last year. Stocks of new cars were larger than a year ago and used cars stocks were 32.9 per cent higher.

Germany Checks Ford Brakes

NEW YORK, Feb. 26—The German Federation of Automobile Industries has obtained a temporary injunction against the Ford Motor Co. of Berlin prohibiting it from advertising or publicly indicating that the new car conforms with German requirements regarding brakes or that the car has been passed by the testing authorities.



Earl H. McCarty

General sales manager of Nash Motors Co., who has been named a vice-president. In making the announcement, C. W. Nash, president, said: "Since Mr. McCarty came with our company in 1922 he has established a splendid record. Because of his accomplishments, the advancement to a vice-presidency comes as a well merited recognition of his outstanding ability."

N.A.C.C. Truck Division to Discuss Sales Outlook

NEW YORK, Feb. 28—The Motor Truck Division of the National Automobile Chamber of Commerce will hold a meeting March 8, at which the prospects for spring and summer sales will be discussed. This meeting will be held at two o'clock in the afternoon, following immediately after the general members' meeting to be held in the morning. Trends in truck sales will be presented by Donald Blanchard, editor, *Commercial Car Journal*, and trends in bus sales will be discussed by L. F. Stoll, assistant vice-president of the McGraw-Hill Co.

Among the points which have been surveyed are comparisons of sales during the winter months with previous years, types of vehicles selling best at present, types of users buying most heavily, areas absorbing the most and prospects for the remainder of the year.

General business conditions will be discussed by Oscar P. Pearson, N.A.C.C. statistician, and reports on the meeting before the Interstate Commerce Commission concerning Federal truck and bus regulation, and on the national organization of truck users will be made.

Warner Increases Plant

MUNCIE, IND., Feb. 27—Demand for the new Warner Hi-Flex, a four-speed transmission, introduced about a year ago, has forced Warner Gear Co. to double in size the new unit building erected about a year and a half ago. New machinery is being rapidly installed and the entire plant is being operated 24 hours a day.

Financial Notes

Packard Motor Car Co. reports net profit for the five months ended Jan. 31 as \$8,438,686, equivalent to \$2.80 a share on \$10 par capital stock. This is a record for any five-month period, the previous record being for the period ended Jan. 31, 1926, which was \$6,756,817. For the same period last year, the income was \$5,367,814, or \$1.78 a share. Net income for January was \$1,627,782, after all charges, and compares with \$518,273 for January, 1927.

Fisk Rubber Co. reports profits before charges for the 14 months ended Dec. 31, 1927 as \$4,839,854 and the amount available for dividends as \$2,620,721. After preferred dividends there was a balance of \$1.36 a share on no par common stock. The report is for 14 months, due to a change in the fiscal year from Oct. 31 to Dec. 31.

Motor Wheel Corp. reports net income for 1927 as \$1,542,834 after depreciation, Federal taxes and other charges. This is equal to \$2.70 a share on the common stock and compares with net income of \$1,625,051, equal to \$2.81 a share in 1926. Preferred stock was retired last August.

Campbell, Wyant & Cannon Foundry Co. reported net income of \$1,240,000 in 1927, equal to \$5.90 a share. Gross sales are estimated at \$6,500,000. The company in 1927 retired all of the \$554,000 outstanding first mortgage bonds and has inaugurated dividends at the rate of \$2 a share on common.

Stromberg Carburetor Co. reports net profit for 1927 as \$168,268, equal to \$2.10 a share. This compares with profit for 1926 of \$463,146, or \$5.79 a share. Regular quarterly dividend of 50 cents, payable April 2 to stockholders of record March 1, has been declared.

Spicer Mfg. Corp. reports net profit for 1927, after depreciation, Federal taxes and other charges, of \$1,116,352, equivalent, after preferred dividends, to \$2.94 a share on the common stock. This compares with profits of \$1,638,990 a year ago.

Radio Corp. of America and subsidiaries report net income for 1927, after all charges, of \$3,473,320, as compared with \$4,661,397 a year ago. This is equivalent to \$7.25 a share on 1,155,400 shares outstanding no par common stock.

Mullins Mfg. Co. reports net earnings of \$588,709 in 1927, equal to \$5.12 a share on the 100,000 shares of no par common stock. This compares with \$301,090 in 1926. Assets at the close of 1927 totaled \$5,049,101 against \$4,269,136 a year earlier. Cash is shown as \$415,814, receivables \$434,034 and inventories \$989,821.

American Car & Foundry Co., for 1927, reported net loss of \$515,076 after charges. Profit and loss deficit on Dec. 31, 1927, was \$842,612.

Gabriel Snubber Mfg. Co. has passed the customary annual dividend to conserve the company's resources for important research and development work, including substantial strengthening and expansion of its experimental facilities.

29 Assembly Plants Now Located Abroad

Increase in Use of Foreign
Materials Reflected in
Parts Exports Drop

WASHINGTON, Feb. 25—A survey showing the trend of American automobile manufacturers toward assembly plants abroad has just been completed by the U. S. Department of Commerce. It shows that from six assembly plants in 1923, American manufacturers during the last five years have increased to 29 such foreign branches. On a production basis, the figures show that during the past five years the increase has amounted to 161 per cent in unit sales.

During 1927, these 29 foreign assembly plants produced a total of 198,500 passenger cars, trucks and chassis, an increase of 34 per cent or 50,342 units over the 1926 production. Most of these branch plants, the department finds, are located in important automotive vehicle distributing centers, the location being partly governed by transportation, labor, material supply, free ports and tariff facilities. The locations of the 29 foreign assembly plants are as follows: three in England, five in Germany, two in Copenhagen, two in Antwerp, one in France, one in Cork, one in Barcelona, two in Port Elizabeth, South Africa, one in Batavia, one in Wellington, two in Australia, near Melbourne, two in Japan, two in Buenos Aires, two in Sao Paulo, one in Mexico and one in Uruguay.

The department finds a definite trend away from American materials in the cars assembled abroad. This is borne out by the figures which show that U. S. exports of parts for assembly during 1925 were valued at \$26,277,588; in 1926, \$16,789,089, and in 1927 fell off to \$12,054,202. Based on car production, the survey shows that in 1925 an average of \$226 worth of parts were manufactured in the United States and sold abroad. In 1926, this figure was \$212 per car and in 1927 was \$178 a car.

American Exhibits Again Given Paris "Back Seat"

PARIS, Feb. 14 (by mail)—Applications for space in this year's Paris automobile show have to be filed not later than the evening of March 31 in order to have any chance of being accepted. The rules show the same discrimination against American makes as in the past, it being stipulated that these shall be given space after all other requirements have been met. While this rule makes it impossible for American firms, no matter how important, to get central locations in the Grand Palais, its practical application has not proved very disadvantageous.

The cost of stands in the passenger car show is 600 francs per square metre.

As the maximum space for foreigners is 80 metres, an American stand would cost 48,000 francs, or approximately \$1,900. For the truck show the cost is 150 francs a metre, or rather less than \$500 for a maximum size stand. A profit sharing system is in force under which a large proportion of the rental is repaid to exhibitors. Last year the refund was 50 per cent of stand rentals. French and foreign exhibitors participate on an equal basis in this refund.

French Car Exports Show 13% Decline

PARIS, Feb. 14 (by mail)—French passenger car and truck exports for 1927 total 51,983, or a loss of 13 per cent compared with the preceding 12 months. Spare parts show an increase, but lamps and other parts listed as automobile accessories have decreased. The total value of automotive exports is 1,740,778,000 francs, or a decrease of 32 per cent compared with 1926. The country purchasing the greatest number of French automobiles was Spain, with a total of 7080, followed by Algeria with 5936, Belgium with 4416 and Switzerland with 4366.

Akron Output Averaging 160,000 Casings a Day

AKRON, Feb. 28—New high records for tire production have been established by Akron factories during the first two months of the year, and indications point to capacity operations in March. Car manufacturers, it is estimated, are taking 15 per cent more tires than they were at this time last year. Spring dating sales to dealers likewise have been unusually heavy.

A daily average of close to 160,000 automobile casings and 170,000 tubes has been maintained by tire plants in the Akron district during February. Of this total, the Goodyear, Goodrich and Firestone companies alone account for more than 135,000 tires a day.

Willys Opens New Plant

OTTAWA, Feb. 27—Five hundred business men of Ontario visited the plant at Weston, Ont., of Willys-Overland, Ltd., for the formal opening of the large new addition to the factory, the visitors being the guests of T. A. Russell, president of the Canadian company. Mr. Russell declared the company had succeeded, to a large degree, in overcoming the trade handicap imposed by the Canadian Government in making a downward revision in the tariffs during the past two years.

Ships 161 Unboxed Cars

NEW YORK, Feb. 25—John N. Willys Export Corp. last week sent aboard the S. S. Eberstein a shipment of 161 unboxed cars for Denmark and Sweden. Of this shipment 120 cars were Whip-pets, 31 were Willys-Knights and 10 were Falcon-Knights.

Eight New Offices Aid Export Growth

Greater Share of Foreign
Trade in Additional Coun-
tries Made Possible

WASHINGTON, Feb. 25—The establishment of eight new offices in the trade centers of foreign countries has been announced by the U. S. Bureau of Foreign and Domestic Commerce. This extension of foreign activities has been made possible, Dr. Julius Klein, director of the bureau, announced through the availability of increased appropriations for the department. This increase was urged on Congress by the National Automobile Chamber of Commerce and allied interests.

The establishment of these new offices, Dr. Klein announces, will mean much to the automobile industry. He points out that in Algeria, where one of the new offices is being opened, the imports of automobiles in 1927 totaled \$9,340,000. Of this sum only \$750 is credited to the United States.

Automobile manufacturers are urged to get in touch with these offices if they seek the extension of their foreign trade in these countries. The locations of the new offices are Budapest, Hungary; Oslo, Norway; Winnipeg, Canada; Guatemala City, Guatemala; La Paz, Bolivia; Tientsin, China; Accra, West Africa, and Algiers, Algeria.

German Makers Combat U. S. Tire Sales Growth

WASHINGTON, Feb. 25—American manufacturers of automobile tires and casings increased their exports to Germany more than 100 per cent in 1927, compared with the previous year, exporting to that country 131,000 tires the first nine months, according to figures announced by the Department of Commerce.

So successful has been the American manufacturer's conquest of the German tire market that concerted action has already been taken by the union of German Tire Manufacturers and the Federal Association of Automobile Manufacturers in Germany. The department is advised by its trade representative at Hamburg that a joint meeting has just been held between these two organizations and that as a result, letters circularizing tire dealers and large tire consumers have been sent all over Germany urging support of German products.

Build 1500 in Russia

WASHINGTON, Feb. 25—An increased production by the Amo Company, automobile manufacturers at Moscow, Russia, is reported to the Department of Commerce by its representative. The company will manufacture 1500 automobiles during the current year. The company's production during 1927 was 425 units.

Exports, Imports and Reimports of the Automotive Industry for January of Current Year and Total for Six Months Ending January, 1928

	Month of January 1927		Month of January 1928		Six Months Ending January 1927		Six Months Ending January 1928	
	Number	Value	Number	Value	Number	Value	Number	Value
Automobiles, parts and accessories.....	..	\$29,149,200	..	\$30,730,682	..	\$147,505,081	..	\$176,366,172
Electric trucks and passenger cars.....	7	10,785	27	42,639	77	99,022	58	126,905
Motor trucks, buses and chassis, except electric (total).....	7,704	5,491,542	11,584	7,305,066	31,827	22,818,450	50,699	35,485,516
Up to 1 ton, inclusive.....	5,787	2,691,652	9,811	4,646,669	24,367	11,272,205	39,948	19,730,068
Over 1 and up to 2 1/2 tons.....	1,596	1,945,283	1,525	1,780,162	6,329	8,057,238	9,634	12,459,464
Over 2 1/2 tons.....	321	854,607	248	878,235	1,131	3,489,007	1,117	3,295,984
PASSENGER CARS								
Passenger cars and chassis, except electric (total).....	22,122	15,747,485	20,476	15,673,778	112,113	83,152,818	118,967	90,809,511
Value up to \$500, inclusive.....	9,607	3,377,598	..	..	46,670	18,705,489	22,096	8,176,296
Value over \$500 up to \$800.....	5,935	4,084,516	..	..	31,820	21,915,902	35,838	18,677,921
Value over \$800 up to \$1,200.....	5,070	5,206,735	..	..	25,927	27,290,238	40,626	33,623,323
Value over \$1,200 up to \$2,000.....	932	1,463,640	..	..	4,860	7,578,947	15,871	19,567,695
Value over \$2,000.....	578	1,614,996	..	..	2,836	7,662,242	4,536	10,764,276
PARTS, ETC.								
Parts, except engines and tires.....	..	..	..	..	..	..	..	..
Automobile unit assemblies.....	..	2,825,569	..	2,641,412	..	14,500,630	..	15,142,246
Automobile parts for replacement.....	..	3,796,350	..	3,637,014	..	18,405,834	..	27,563,208
Automobile accessories.....	..	591,615	..	685,810	..	4,241,593	..	3,483,013
Automobile service appliances (n. e. s.).....	..	748,411	..	360,798	..	3,269,226	..	2,743,209
Trailers.....	140	46,883	55	20,390	409	133,521	463	217,827
Airplanes, seaplanes and other aircraft.....	1	19,500	32	310,751	24	179,208	44	536,958
Parts of airplanes, except engines and tires..	..	22,767	..	25,457	..	51,617	..	380,939
BICYCLES								
Bicycles.....	245	7,277	709	18,711	2,485	67,810	2,622	65,373
Motorcycles.....	1,610	363,512	1,482	365,272	9,185	1,997,538	8,380	1,897,290
Parts, except tires.....	..	105,972	..	107,513	..	820,004	..	622,991
INTERNAL COMBUSTION ENGINES								
Stationary and Portable	..	..	..	..	..	..	..	..
Diesel and Semi-Diesel.....	26	148,560	38	94,796	460	906,044	292	452,832
Other stationary and portable:	..	..	..	..	..	..	..	..
Not over 10 Hp.....	2,214	201,745	3,378	273,668	17,923	1,813,645	15,229	1,404,478
Over 10 Hp.....	127	90,275	104	73,152	1,888	1,640,139	1,960	852,051
Automobile engines for:	..	..	..	..	..	..	..	..
Motor trucks and buses.....	273	29,086	887	89,764	2,380	322,776	2,015	281,907
Passenger cars.....	5,301	656,768	5,661	655,199	30,118	3,963,958	25,723	3,473,866
Tractors.....	99	46,945	62	21,711	1,447	750,470	474	128,999
Aircraft.....	5	42,221	4	4,125	43	145,326	61	361,183
Accessories and parts.....	..	344,532	..	255,509	..	2,022,811	..	1,226,799
Automobiles and chassis (dutiable).....	34	56,348	29	61,205	477	743,336	354	670,930
Other vehicles and parts for them (dutiable)	..	5,806	..	17,861	..	98,122	..	164,918
Automobiles (free from duty).....	9	7,160	28	27,562	102	155,670	85	135,201

Empire Steel Unification to be Effective March 1

CLEVELAND, Feb. 25—Unified control of the Empire Steel Co., a merger of six northern Ohio sheet steel mills, will become effective March 1, it was decided at the organization meeting here. The merged companies are Mansfield Sheet & Tin Plate Co., the Waddell, Thomas and Falcon Steel companies of Niles, the Ashtabula Sheet Steel Co., and the Empire Steel Co., of Cleveland.

Officers are W. H. Davey, president; J. D. Waddell, vice-president; W. R. Jenkins, treasurer; A. I. Davey, secretary, and Samuel Davey, general manager. The executive committee is Harry Pickands, Pickands, Mather Co.; W. A. Thomas, former president of the Thomas Co., J. D. Waddell, W. H. Davey and W. R. Jenkins. The consolidated company will have annual production capacity of 397,000 tons of sheet steel, ranking fifth in the country.

Studebaker Exports Double

SOUTH BEND, Feb. 27—Shipments of Studebaker and Erskine cars to foreign distributors in January were 101 per cent larger than in January, 1927, according to factory statement.

Export Managers to Meet

NEW YORK, Feb. 23—The Export Managers Club of New York, Inc., is planning its eighth annual get-together meeting and banquet at the Hotel Pennsylvania, New York, on March 20. Topics for discussion at this meeting

include new export methods, the use of aviation in expanding foreign trade and cables, international telephone and radio. In the afternoon session the topics handled will be budgetary control of export business, export sales quotas and the use of motion pictures in promoting foreign sales.

Hardwood Sales Increase, Prices Show Upward Trend

ATLANTA, Feb. 27—Though the automobile and body manufacturing industries in the Middle West and Eastern territory are not placing orders for their hardwood needs very far in advance, there has been a further appreciable increase in the volume of this business the past two weeks. Total sales to the automotive industries for the first half of February were substantially larger than they were at that period in either 1926 or 1927. The primary call is for items in the white ash list of the best grade, dimensions of 10/4 to 16/4, for the same dimensions in the second best grade of ash, with a fair call reported for the best grade of maple in thicker dimensions. Prices are on an upward tendency, and as orders now are well in excess of production in the Southeast, further price increases are expected.

Hall Re-elects Officers

DETROIT, Feb. 25—Directors and officers of Hall Lamp Co. have been re-elected for 1928. Directors have declared a dividend of 25 cents per share on the outstanding capital stock, payable March 15 to stockholders of record March first.

N.S.P.A. Resolution Hits Derogatory Advertising

DETROIT, Feb. 25—The directors of the National Standard Parts Association have approved the following resolution which has been endorsed by three publishers. Copies will be sent to all automotive trade papers.

"Whereas the spirit of merchandising competition of today tends to higher standards and definite codes of ethics, now be it

"Resolved: That the Board of Directors of the National Standard Parts Association, in meeting assembled, tenth day of February, 1928, unanimously opposes the practice of provocative or derogatory advertising or other merchandising propaganda of like character, and urges its members to refrain from the use of same. And be it further

"Resolved: That the trade press of the automotive industry be urgently requested not to accept provocative or derogatory advertisements or publicity from members of this or any other trade association, or from independent sources of any nature whatsoever."

Lille Seeks Car Display

WASHINGTON, Feb. 25—The Fourth Commercial and International Fair will be held at Lille, France, from April 6 to 22, the Department of Commerce is advised by its representative in France. It is suggested to the department that the attendance of the fair and popularity of American-made automobiles are such that it would justify American automobile manufacturers showing their six-cylinder de luxe passenger line.

Retail Sales Show February Increase

(Continued from page 386)

cars. Prices on used cars are generally lower under the influence of reduced prices in the lower priced new cars and this is stimulating sales without the necessity of bargain offerings. Mild weather conditions are having important effect on the good early year used car movement.

Reports from leading centers follow:

Boston

Motor car sales for February will show an upward curve compared to a year ago, making the second month of increased sales for the comparative period. Washington's Birthday open house was responsible for making this a certainty. The dealers now are looking forward to the Boston show in two weeks to give March a start to carry the first quarter through to a substantial increase. Used cars have begun to move now.

New York

Motor car sales for February have lacked some of the resiliency which dealers would like to see. Sales generally compare fairly favorably with February a year ago but prospective customers continue a little slow in placing their orders. Dealers' stocks of new cars are gradually accumulating. The used car situation is improved. Commercial vehicle sales have been better proportionately than passenger car sales.

Baltimore

Despite that fact that in some lines deliveries of new cars are decidedly slow, business during February was much better than during the corresponding period of last year. January also measured up well in spite of the fact that there was some decidedly bad weather that month. There appears to be quite some difficulty in moving used cars and many dealers are featuring big sales of these machines in an effort to clean up their stocks.

Atlanta

February has witnessed a further impetus in motor car sales, the month being appreciably larger than last year. The used car situation, however, continues a serious drawback, and dealers are still disposing of surplus merchandise at exceptionally low prices, sacrificing profits. Motor truck sales have been fairly good. Outlook is unusually good for the next few months.

Detroit

Retail automobile selling registered a marked improvement in February compared with the two previous months. The improved condition is due to increased employment in automobile and allied factories. Besides an improvement in new car sales, distributors and dealers also report a quickening demand for used automobiles. Movement of the small, cheap used cars is particularly strong.

Milwaukee

Sales of new cars are progressing well in February and dealers hope to do as large a business as they did a year ago. The total volume of new car sales in January was less than a year ago the same month but this is accounted for by the lack of Fords on the market. Other lower priced

cars are selling in good volume and the medium priced car field is experiencing good sales. General business conditions are looking up and forecasts point to an excellent first half of 1928.

Chicago

New and used car sales for February were not more than even with January and most dealers reported a slightly lesser volume. New car stocks, however, are not high and although used car stocks are high, they are not considered abnormally so.

St. Louis

Business for February showed a large improvement over January, due principally to the interest created by the show just closed. Used car sales also have been more satisfactory during the present month and stocks are much lower than at this time last year. Dealers anticipate a good year despite the poor start in January.

Kansas City

February sales are rounding out in good shape. Dealers with new models all are reporting increases over last year. Only two or three dealers in the middle price class report a falling off. The used car situation is unusually good. There has been a good demand most of the winter for closed used cars.

New Orleans

Tardiness of delivery of Fords in this vicinity is having a dragging effect upon the automobile industry in general. Considerable complaint is manifested on all sides by prospective purchasers who have grown restless waiting for delivery of Fords on promises that should have been fulfilled 60 days ago. A sizeable percentage of these purchasers have cancelled their orders and purchased other light cars. The automotive situation both as to new and used cars, as well as automotive accessories, has not been improved as expected.

Cincinnati

February business has shown a decided pick-up, both in the matter of new and used car sales. Following the sharp slump in January new car sales, as compared with the same month last year, sales this month have kept close to the 1927 average. Practically all lines benefited by the increased business. The pick-up in used car sales has been gratifying and most of the dealers will enter the spring buying season with smaller used car inventories. Truck sales also have improved.

Cleveland

Heavy gains in small car sales have been shown during the month of February, but the expected increase in medium priced and top priced lines has not materialized. Used cars are selling slowly. Dealers' prices are close to trade-in values in an effort to move them. Open weather, however, is expected to bring relief.

Dallas

Automotive business in Texas and parts of adjoining states for February is characterized as "seasonable" by dealers and jobbers. Fact that few deliveries were made by Ford dealers augmented sales of

other low-priced cars. The total number of new car sales was above that of same month a year ago and slightly below those for January. Dealers in low priced cars not heavily stocked. In other lines it was said the stocks are normal. Used car sales slow and draggy, stocks heavy and prices lower. The outlook for business in most lines is promising. Truck sales about same as for January.

Minneapolis

This is a shopping season in the automobile business in this district. Actual sales are quiet. Prospects are hawking their used cars as a bait for new sales. However, the outlook for the spring break is good. Weather conditions are not favorable to new car sales, neither are the road conditions. Business is slowly improving generally and the forecast is for an unusually good year in the automobile trade when the weather changes.

Denver

Low priced cars are still away off in sales, compared with February, 1927, and with the monthly average throughout 1927. Slightly higher priced cars show a gain over January, and about even with February, a year ago. Medium priced cars are somewhat ahead of the 1927 average and the highest grade cars are selling better than in 1927. Stocks of used cars are generally reduced. General conditions throughout this territory are fair.

Seattle

Although sales in January and February averaged 15 to 20 per cent less than a year ago, sales the next few months are expected to equal those of last year. Lumber, key industry here, expects better year due to decreased competition from Southern pine fields. Agricultural section in splendid shape and will buy substantially. Credit conditions average. Truck sales slightly less than last year. Used car situation somewhat heavy with dealers united on policy of not overpaying for second-hand cars.

San Francisco

New car sales in this territory failed to improve in February, as compared with January, but were slightly better than in February, last year. Failure of Ford to start deliveries in February as promised by local dealers helped sales of other low priced cars. Used cars are at a standstill. Truck sales show better than usual spring improvement. General business conditions are fair.

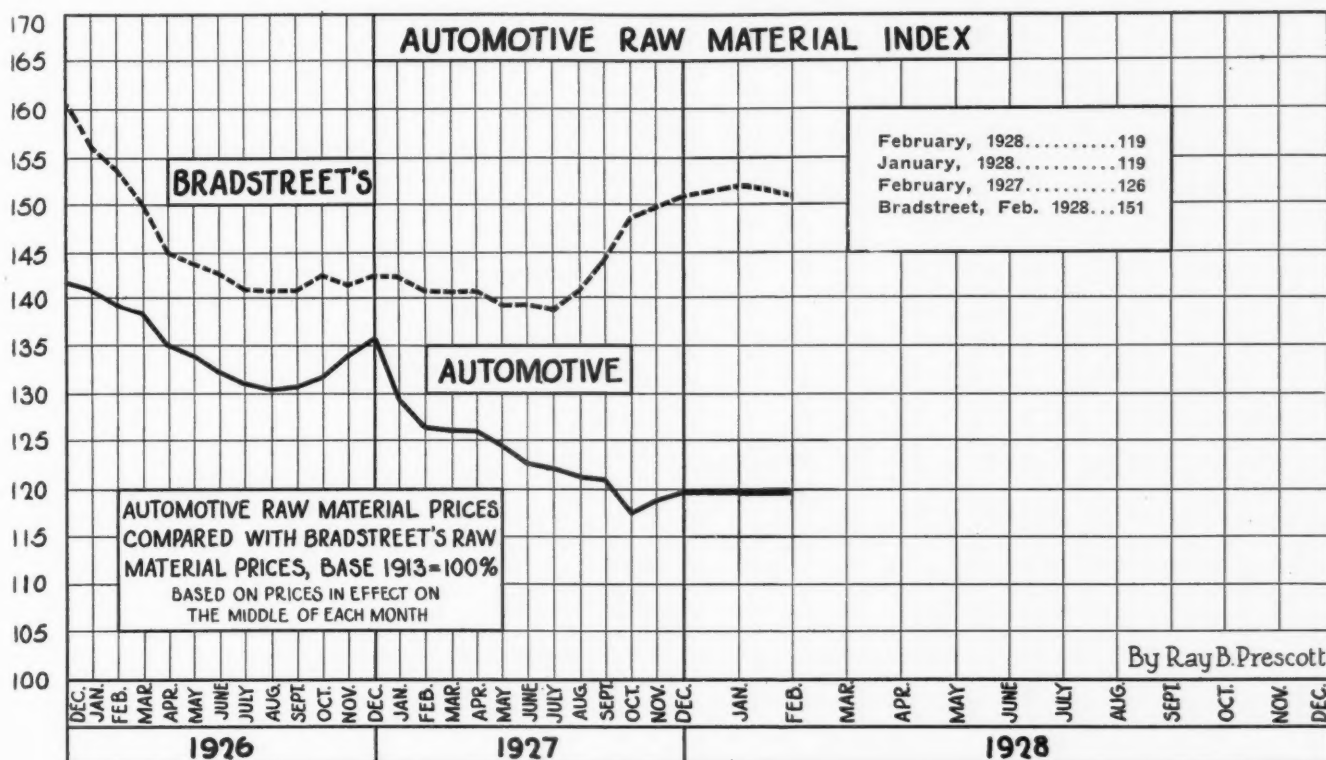
Los Angeles

February sales about balance with those of February, last year, but they show the usual recession from the January total. The market has not yet developed the strength anticipated, but it is expected that the annual Los Angeles show, opening Sunday, will stimulate business. Used car stocks are within safe bounds.

Appleton Appoints Dodd

CHICAGO, Feb. 29—The Appleton Steel Tube Co., Appleton, Wis., has appointed Theodore L. Dodd, 80 East Jackson Blvd., this city, as sales representative.

Raw Material Prices Maintain Even Tone



Kissell Adds Six Models

Ranging \$3,185 to \$3,885

HARTFORD, WIS., Feb. 28—Kissell Motor Car Co. is introducing a complete series of body types on the White Eagle chassis. The body styles now obtainable in addition to the speedster are coupe roadster, victoria, tourster, brougham, seven-passenger sedan and berline sedan at prices ranging from \$3,185 to \$3,885 including all equipment except spare tires.

Wheelbase of the new cars is optional, either 132 in. or 139 in. being supplied. Equipment includes Lovejoy hydraulic shock absorbers, bumpers front and rear, electric clock, automatic windshield wiper, double rear view mirrors, six wire wheels, with two mounted on the sides of the hood, trunks with suit cases on closed models, vanity cases, silk curtains on enclosed models and kick plates. Chase silk mohair upholstery is used in enclosed models and Spanish leather in open. Colors are optional at no additional charge.

Miller Reports Net Loss

AKRON, Feb. 25—A net loss of \$390,632 for 1927, after all charges, was reported by the Miller Rubber Co. Expenditure on improvements last year totaled \$750,779, and deferred retired during the year was \$513,000.

Moon Adds 12 Distributors

ST. LOUIS, Feb. 27—Since the introduction of the new Moon Aerotype 8-80 line at the recent shows, 12 new distributors and 42 new dealers have been

added, Moon Motor Car Co. reports. Cities in which new distributor franchises have been awarded include Philadelphia, Minneapolis, San Francisco, Memphis, Cleveland, Little Rock, Miami and others.

Budd Says Higher Output

Will Follow New Models

PHILADELPHIA, Feb. 25—Edward G. Budd, president of the E. G. Budd Mfg. Co., in his annual report to stockholders this week, said the company had every prospect of doing a large volume of business in 1928. During the last year, he said, the company had been under the obligation of cooperating with the waiting for the development of new lines of products on the part of several of its largest customers.

The report said that one customer had started production of a new line in September and that this had been reflected in building up Budd sales. The other large customer is expected to be handling a large volume of Budd products by spring. All development work, overhead, amortization and other charges for 1927 were made against operating expenses.

France Cuts Tractor Duty

NEW YORK, Feb. 28—The French Government has reduced tariffs on all classes of farm machinery from the United States. On tractors the tariff has been reduced to 270 francs per 100 kilos or about 3300 francs per tractor. Under the former rate the tariff was about 5000 francs per machine.

Gill and Schlieder Now

Consolidated at St. Cloud

ST. CLOUD, MINN., Feb. 27—Following the consolidation of Gill Mfg. Co., Chicago, and the Schlieder Mfg. Co., Detroit, with the Diamond Motor Parts Co., all operations have been concentrated here. George G. Bouthinon of Diamond is president, treasurer and general manager; E. J. Smith, formerly president of Gill, is vice-president and will direct sales, and V. W. Schlieder is secretary and will direct the equipment division.

Plans of the company contemplate the merging of other manufacturers bringing additional major parts lines under the Diamond trade mark. It is planned also to increase the number of direct factory branches and an extensive advertising campaign will be carried on in the domestic and foreign fields.

Tax Collections Halting

Sales in Some Districts

DETROIT, Feb. 25—Demand for Dodge Brothers passenger cars and commercial vehicles continues to increase, according to John R. Lee, general sales manager. The company expects to set a new February record for exports. Though automobile sales appear to be increasing in practically all sections of the country, said Mr. Lee, there is a temporary spotted condition resulting from the collection of local taxes on cars in some communities. When the tax situation is cleared up, sales in these sections should show a normal upward trend, he declared.

January Ohio Sales Show 4 to 12% Drop

COLUMBUS, Feb. 26—The Ohio Council, National Automobile Dealers Association, has compiled statistics of registration of new passenger cars in seven of the most populous counties in Ohio which shows a decline from the registrations in January of last year. The declines are not very marked.

In Cuyahoga county there were 1436 new cars sold; Hamilton county with Cincinnati had 1088 new cars; Summit county with Akron had 573 sales; Lucas county with Toledo had 404 new car sales; Franklin county with Columbus had 634 new car sales; Mahoning county with Youngstown had 314 new car sales and Stark county with Canton had 263 new car sales.

In comparison with January of the previous year these sales were about 4 to 12 per cent less.

Jobbers Sales Increased

DETROIT, Feb. 25—As a result of his recent trip in which he visited jobbers in the principal cities extending from Philadelphia to Atlanta, E. P. Chalfant, executive vice-president of the National Standard Parts Association, reports heavy increases in business for this area and improved collections. "All the jobbers I talked with reported increases in business ranging from 25 per cent to 80 per cent compared with the volume enjoyed during the corresponding period last year," said Mr. Chalfant.

New Jersey Sales Lower

NEW YORK, Feb. 25—January sales of new cars in New Jersey totaled 4334 as compared with 6594 a year ago, according to Sherlock & Arnold.

Coming Feature Issues of Chilton Class Jour- nal Publications

May 3—Sales and Service Reference Number—Motor Age

June 10—A. E. A. Summer Meeting Number—Motor World Wholesale

June 23—Engineering Issue—Automotive Industries

Oshkosh Truck Holders Get Reorganization Plan

OSHKOSH, WIS., Feb. 25—At a joint meeting of bondholders and stockholders of the Oshkosh Motor Truck Mfg. Co., manufacturer of quadruple drive and rear wheel drive commercial vehicles, in receivership, tentative approval was given a plan suggested by W. G. Maxcy, receiver, providing for a complete reorganization and refinancing. It was announced that the operation of the plant during 1927 resulted in a clear profit of \$24,000 and that prospects are for a successful future if the present financial burden is relieved. It is proposed to exchange all present bonds for stock and to sell \$150,000 of new stock for cash, giving present holders buying preference. As a bonus, each purchaser of a common share would receive a preferred share of equal value.

Swallow Factory Sold

KANSAS CITY, Feb. 25—The Swallow airplane factory and flying field at Wichita, Kan., has been sold to a group of Wichita business men for \$125,000. The company has been operated under a receivership for the last few months.

Senate Authorizes Road Congress Here

WASHINGTON, March 1—The Senate this week adopted S. J. R. 31, introduced by Senator Phipps, which authorizes the United States to extend an invitation to the Permanent International Association of Road Congress, inviting that organization to hold its 1929 convention in this country. The resolution also carried an authorization of \$15,000 necessary to meet the expenses of holding the meeting. The Senate also adopted S. J. R. 30, likewise introduced by Senator Phipps, which authorizes the participation of the United States in the Second Pan-American Conference on Highways to be held at Rio de Janeiro. Both resolutions were favorably acted upon by the committee on foreign relations and were unanimously passed by the Senate.

Ryan to Make Propellers

LOS ANGELES, Feb. 25—Announcement is made by T. Claude Ryan, president of the Ryan Aeronautical Corp., that a factory will be located in San Diego soon for the manufacture of such auxiliary apparatus as propellers, wing ribs and landing gear. The new company will be separate from the assembling plant that is to construct the Ryan-Selman's rotary type engine.

Gates Sales Set Mark

DENVER, Feb. 25—Gates Rubber Co. reports a new peak for accessory sales in January. The largest gains were scored in the Rocky Mountain district, with the Missouri, Indiana-Kentucky district, and the Texas-Oklahoma district following.

Calendar of Coming Events

SHOWS

All Western Road Show, Los Angeles, March 7-11
American Electric Railway Ass'n, Public Auditorium, Cleveland...Sept. 22-28
American Society for Steel Treating, Commercial Museum, Philadelphia...Oct. 8-13
Automotive Equipment Association, Coliseum, Chicago...Oct. 22-27
Berlin...Nov. 8-18
*Boston, Mechanics Bldg. ...March 10-17
Brussels...Dec. 8-19
Geneva...March 16-25
International Aircraft Show, Berlin, March 23-April 11
Layback, Yugoslavia...June 2-11
Leipzig, trucks only...March 4-14
Lille, France...April 6-22
London, passenger cars...Oct. 11-20
National Standard Parts Association, Cleveland Auditorium...Oct. 29-Nov. 3
Nice...March 19-31
Oran, Algeria...April 1-May 3
Paris, passenger cars...Oct. 4-14
Paris, motorcycles...Oct. 25-Nov. 4
Paris, trucks...Nov. 15-25
Prague...Sept. 1-9
Rio de Janeiro...May 3-13
Tunis, Tunisia...April 27-May 6
United States Good Roads Show, Des Moines...May 28-June 1
Vienna, Sample Fair...March 11-17
Zagreb, Yugoslavia...April 29-May 6

*Will have special shop equipment exhibit.

CONVENTIONS

American Electric Railway Ass'n, Public Auditorium, Cleveland...Sept. 22-28
American Gear Manufacturers Association, Hotel Seneca, Rochester, N. Y. ...April 19-21
American Society of Mechanical Engineers, National Meeting Materials Handling Division, Philadelphia, April 23-24
American Society of Mechanical Engineers, Joint Meeting of Aeronautic and Wood Industries Divisions, Detroit...June 27-28
American Society for Steel Treating, Commercial Museum, Philadelphia...Oct. 8-13
American Society for Testing Materials, Chalfonte-Haddon Hall Hotels, Atlantic City, N. J. ...June 25-29
American Welding Society, Engineers Society Bldg., New York...April 25-27
Automotive Equipment Association, Grand Hotel, Mackinac Island, June 10-16
Automotive Equipment Association, Coliseum, Chicago...Oct. 22-27
Chamber of Commerce of the United States of America, Washington May 8-11
National Association of Credit Men, Hotel Olympia, Seattle, Washington...June 11-16
National Foreign Trade Council, Houston, Texas...April 25-27

National Hardware Association of the United States, Metal Branch, Copley-Plaza, Boston...May 3-4
National Safety Council, Mid-West Safety Congress, Stevens Hotel, Chicago...March 19
National Safety Council, Central States Safety Congress, Kansas City, April 23-25
National Safety Council, National Congress, New York...Oct. 1-5
National Standard Parts Association, Hollenden Hotel, Cleveland, Oct. 29-Nov. 3
Society of Automotive Engineers, Metropolitan Section, inspection of Saturnia...March 28
Society of Automotive Engineers, Summer Meeting, Chateau Frontenac, Quebec...June 26-29
United States Good Roads Association and Bankhead National Highway Association, Des Moines, May 28-June 1

RACES

Atlantic City...May 5
Belgium...Aug. 12
Detroit...June 3
France...July 1
Germany...July 15
Great Britain...Sept. 22
Indianapolis...May 30
Italy...Sept. 2
Spain...July 29